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By the same Author,


A TREATISE
ON DOUBTFUL PREGNANCY,

With Numerous Cases

AND STATISTICAL DETAILS IN RELATION TO THE VALUE OF
THE INDIVIDUAL SYMPTOMS OF PREGNANCY.

ON

INFANTILE LARYNGISMUS.



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ON

INFANTILE LARYNGISMUS:

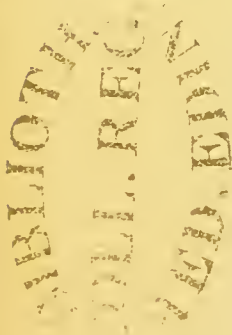
WITH

OBSERVATIONS ON ARTIFICIAL FEEDING,
AS A FREQUENT CAUSE OF THIS COMPLAINT, AND OF
OTHER CONVULSIVE DISEASES
OF INFANTS.

BY

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MDCCCXLIX.

TO

SIR JAMES CLARK, BART. M.D. F.R.S.

Physician in Ordinary to the Queen,

ETC. ETC.

TO WHOSE WRITINGS ON DISORDERS OF THE

RESPIRATORY AND DIGESTIVE ORGANS

THE MEDICAL PROFESSION IS SO DEEPLY INDEBTED,

THIS SMALL WORK IS DEDICATED,

WITH SINCERE ESTEEM,

BY THE AUTHOR.

P R E F A C E.

THE attention of the Author having for some years been strongly attracted to the consideration of the Disease which forms the subject of the following pages, he was induced to offer a few remarks upon it, in a paper read before the Westminster Medical Society in April, 1847. As the questions discussed could not be then entered into so fully as their importance required, the cases and observations contained in the present publication are now submitted to the profession as a slight contribution towards their elucidation, in the hope that they will be thought to possess some interest, by those who are more especially concerned in the treatment of Infantile diseases.

29, *Brook Street, Grosvenor Square,*
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INFANTILE LARYNGISMUS.

THERE are no diseases of children which possess so fearful an interest, or excite so much anxiety in the minds of parents, as those of a *convulsive* character. The malady now to be considered is of this description; but although it is of frequent occurrence, especially in large and densely populated towns, and is indicated by peculiar symptoms, it has only lately attracted the attention of the profession, to an extent which is due to its importance and dangerous character.

The *appellation* of the complaint itself has been a fruitful source of discussion, owing to the uncertainty which still exists as to its origin. Practitioners, however, are more inclined to agree, at the present time, on many points which formerly elicited considerable difference of opinion, but a clear understanding respecting those which are of the

greatest importance—viz., its *cause* and *treatment*—by no means prevails.

Laryngismus appears to have excited very little notice amongst medical writers in this country, during the last century, until 1761, when Dr. James Simpson published, at Edinburgh, an inaugural thesis, “*De Asthmate Infantum Spasmodico* ;” this was followed by a publication of Dr. John Millar,¹ in 1769, which not only caused much greater attention to be paid to the subject, but excited an active controversy in this country, as well as on the continent and in America. Dr. Rush² gave a short account of the disease in the *Philadelphia Gazette* in 1770, whilst Dr. Burns,³ of Glasgow, in 1809, and Dr. James Hamilton,⁴ of Edinburgh, in 1813, published a very full description of the symptoms characterizing this affection; the latter author remarking, “this complaint is of such rare occurrence, that it has been little attended to by practitioners, and has not been accurately described by any authors.”

Dr. Underwood, in his valuable work,⁵ did not at first describe the disease from his own observation, as he merely gives the account “of a gentleman of

¹ Observations on the Asthma and Hooping Cough.

² On the Spasmodic Asthma of Children.

³ Practice of Midwifery.

⁴ Hints for the Treatment of the principal Diseases of Infants.

⁵ Treatise on the Diseases of Children.

great respectability and experience, by whom it was regarded as a spasm of the *stomach, lungs, and other vital parts.*"

The work which principally drew the attention of English practitioners to this complaint was that of Dr. John Clarke,¹ who described it as "*a peculiar species of convulsion in infant children;*" and followed as it was by Dr. Gooch's² excellent observations on the disease, to which he gave the quaint but expressive term of "*Child-crowing,*" the symptoms whereby the malady could be alone distinguished from *common convulsions* were speedily recognised.

Some foreign authors, who are said to have given a description of the disease at an earlier period than the writers just quoted, appear, however, to have merely pointed out the pathognomonic distinction between *inflammatory* and *spasmodic* croup, whilst it was strongly, though erroneously asserted by a few continental practitioners, that Millar's observations, and the cases he reported, were applicable to the latter disease. Dr. Mason Good³ appears to be the first author who gave to this complaint the appellation of "*Laryngismus Stridulus,*" which is now

¹ Commentaries on some of the most important Diseases of Children, 1815.

² Lectures (by Skinner.)

³ Practice of Medicine.

usually employed; but it may very properly be abbreviated, more especially as the stridulous noise in respiration is not always present, either in the *most severe*, or in the *slightest* forms of the malady.

Interesting papers on the subject now under consideration have appeared from time to time in the medical journals, by Dr. Henry Davies,¹ Mr. Pretty,² Mr. Hood, of Kilmarnock,³ Sir Henry Marsh,⁴ and Mr. Robertson,⁵ whilst the able article of Dr. Copland, in his Dictionary of Medicine, and that by Mr. Joy, in the Cyclopædia of Practical Medicine, have materially contributed to disseminate a more thorough knowledge of the nature of this complaint. Mr. North has also shortly alluded to it in his excellent work.⁶

In 1836, Dr. Hugh Ley published a voluminous treatise on this disease, in which he adopted the nomenclature of Dr. Good. Dr. Ley entitled his monograph "An Essay on Laryngismus Stridulus, or Cronp-like inspiration of Infants." It evidences laborious research, and contains a large mass of useful information; but the peculiar views entertained by the author respecting the essential cause

¹ London Medical Repository, vol. 18.

² London Medical and Physical Journal, vol. 55.

³ Edinburgh Journal of Medical Science, 1827.

⁴ Dublin Hospital Reports.

⁵ Med. Gazette, vol. xiii.

⁶ Practical Observations on the Convulsions of Infants, 1826.

of the affection, are by no means consistent with the experience of the profession in general.

Amongst foreign authors, *Bretonneau*, of Tours, has treated of this complaint, under the term "*Angina Stridula*," whilst *Kopp* and *Hirsch* have adopted the title of "Thymic Asthma," to designate the disease. The rare occurrence of this affection in France may be estimated by the fact, that only one case is recorded as being admitted into the *Hôpital des Enfants Malades*, of Paris, and another instance is given by *M. Constant*, in the "*Bulletin de Thérapeutique*." In the work of *Messrs. Rilliet and Barthez*, "*Traité Clinique et Pratique des Maladies des Enfants*," it is remarked "La maladie n'est guère connue en France que par tradition Allemande ou Anglaise," (vol. ii. p. 252.)

HISTORY OF THE DISEASE.

Laryngismus occurs under *four* different forms. In some cases the symptoms are trivial at first, but *gradually* become violent; in others the attack at its onset proves instantly fatal. Many instances of apparently unaccountable sudden death in infants may, I think, be explained in this manner.

When the symptoms are of a decided character,

they immediately attract the attention of parents and of nurses, from their peculiarity; but, in numerous cases, they imperceptibly increase in strength, and their advent is of such an insidious character that the disease has gained a strong hold upon the infant's constitution before its true nature is detected.

The affection depends essentially on a constriction of the entrance to the windpipe or "glottis," which impedes the free admission of air into the lungs, in the milder forms; whilst, in the most serious cases, it altogether prevents it.

FIRST FORM OF THE DISEASE.—Slight constriction of the edges of the rima glottidis occurs suddenly and in a transitory manner, causing, for the instant, an exertion on the part of the infant to recover its breath, and producing a feeling of oppression and alarm, indicated by a short cry, and the anxiety depicted on its features. The effect produced resembles that which may be observed when an infant is imprudently tossed up and down in the arms of a nurse or attendant, and is sometimes accompanied by a peculiar noise during inspiration, called a "catching in the breath." This slight and temporary spasm of the glottis is not associated with convulsive action of any other part of the body; the attacks come on at

irregular intervals and at uncertain times, although, generally, the symptoms are more liable to occur whilst the infant is asleep, or at the moment of awaking.

So little importance is generally attached to this symptom by nurses, that the practitioner, when called on, at an after period, to treat the more severe form of the complaint, finds that the "catching" alluded to, is often not mentioned until questions are put, which at once recall the recollection of its having been of frequent occurrence, with the addition, that it was always arrested by lifting the infant from a recumbent, to an erect position.

SECOND FORM.—In this variety, the area of the glottis is still more diminished by the nearer approximation of its margins, the closure, however, not being perfect, except perhaps for a moment.

There is now a much longer interruption to the respiratory function, and the symptoms of suffocation appear more imminent; there is a violent struggle to inspire through the contracted aperture of the wind-pipe in order to fill the lungs; the countenance presents the characteristics of great anxiety with indications of distress, becoming at first red, but soon changing into the purple hue of strangulation; the face becomes turgid and swollen, and the *tongue* also

in some cases.¹ In other instances, an ashy paleness of the face is observed. The arms are thrown out, the eyes appear either wide open and staring, or more rarely seem turned up in their sockets; the nostrils are dilated; the head is thrown back; the limbs become rigid, and the abdominal muscles contracted. There is frequently also a convulsive and violent action of other muscles, especially of the flexors, causing a peculiar contraction of the fingers and toes, as well as of the wrists and ankles, a state which has been called the CARPO-PEDAL SPASM. In such cases the thumb is bent in upon the palm, the fingers closing over it, whilst the toes and instep are bent downwards. Occasionally the body itself is bent suddenly backwards, as if by a violent effort, and it appears to the by-standers as if nature could hold out no longer, when, at length, the attempt at inspiration is partially successful, being attended by a shrill whooping noise, which has been termed "crowing," although it more closely resembles the concluding rising note produced by the clucking of a hen. This sound is not of so full and sonorous a character as that of hooping-cough, but seems more acute, and without the rough hoarseness of

¹ Kopp describes the tongue as protruding beyond the lips in the great majority of cases; but this does not accord with my own experience.

croup. It is often an indication that the paroxysm has terminated; but in some cases a succession of incomplete or interrupted shrill sibilant catches supervenes before a sufficient inhalation takes place, as if the margins of the glottis were for a time somewhat relaxed, becoming immediately again constricted, so that the expirations bear in some degree a resemblance to the short and feeble bleatings of an animal.

When, however, respiration is again properly re-established, the infant expresses its fright and suffering by a fit of crying, and falls asleep. On other occasions, when the attack is unusually severe, a listlessness and torpor remain for a short period afterwards; whilst, in rarer instances of this disease, the child continues during some hours in an anxious state of distress.

These paroxysms vary much in their frequency, duration, and severity; there is no regularity in the intervals between the attacks; but as the complaint advances they generally become shorter, and, in some instances, do not continue beyond an hour at a time, or even half that period; the slightest noise or emotion being quite sufficient to produce a paroxysm.

The breathlessness, or struggling for air, is apparently relieved in some cases by a violent expulsion

of wind from the stomach, or "per anum," which is succeeded by a fit of screaming; occasionally, also, there are involuntary evacuations during the paroxysm.

Repeated attacks of this nature may occur without the accompanying crowing noise previously mentioned, especially when the disease becomes less severe in its character.

An acute plaintive cry frequently commences or terminates the paroxysm, when the child remains quiet and subdued for some minutes; after which period, it resumes its natural cheerfulness and aspect, enjoying perfect health in the intervals.

The *duration of the paroxysm* varies from a few seconds to three or four minutes; but in the latter description of cases it is more a succession of paroxysms—air occasionally gaining admittance into the lungs, during the slight and almost imperceptible intervals between them.

Remissions and exacerbations often take place for weeks, and sometimes for months, before a complete cure can be effected; whilst in other cases, on the contrary, the complaint suddenly disappears.

THIRD FORM.—This is a combination of the foregoing variety of the disease, with the fearful addition of *general or cerebral convulsions*, which, in all probability, are sometimes produced by the blood

supplied to the brain being imperfectly decarbonized in consequence of partial asphyxia.

FOURTH FORM. — *Complete infantile spasmodic asphyxia*, produced by a sudden and convulsive closure of the glottis, which proves as speedily fatal as if the infant were plunged under water, or strangled by a cord round its neck. In this form of the complaint no crowing sound is audible, as inspiration is totally suspended, and the face of the child, instead of being flushed and turgid, exhibits often a cadaverous aspect, similar to the pallor and lividity of those asphyxiated by carbonic acid gas, or any other noxious vapour. An infant may have passed through numerous severe attacks of this dangerous disease, combined with cerebral convulsions; it may be also perhaps improving otherwise in general health, at the same time that the paroxysms have latterly occurred at longer intervals, yet notwithstanding all the apparent amendment, it is sometimes in a moment carried off by this form of the disease, without any previous warning. Two such instances have occurred in my own practice. The infant may be laughing at the time, or quietly observing the occurrences taking place around it, without the slightest precursory symptom being perceived. There exists in such cases, perhaps, a combination of some hitherto unexplained and intense

affection of the pneumogastric nerve, seeing that the mode of death now adverted to, resembles forcibly the same quiet but sudden exit from life which is noticed in cases of angina pectoris, or syncope anginosa. This marked resemblance in some degree warrants the conclusion, that both are attributable to the same cause.

AGE OF INFANTS MOST LIABLE TO THE DISEASE.

With few exceptions, the period of dentition appears to be the boundary within which infants are liable to attacks of this complaint. During that time of life there is so much vascularity in the different textures of the body, and such natural irritability of the entire nervous system, that it is not surprising if numerous disorders, both functional and organic, are then peculiarly rife. The brain is larger in proportion to other parts of the body: there is an especial irritability of the stomach and intestinal canal at this age, and when it is considered how frequently the latter organs are disordered by the unnatural and improper kinds of food which are made to pass through them, it is reasonably to be expected that such irritability will become much increased, and speedily extend, by nervous communication, to the other important organs. After a time, an erythism of the spinal system ap-

pears to be produced, and this dangerous excess of nervous excitability is easily communicated to the medulla oblongata and brain, consecutively, if not instantaneously.

Dentition may be almost considered to commence with the birth of the infant, and appears not to be limited strictly to the period when the teeth are protruding through the gums; nevertheless, the time when the child is "cutting its teeth" is that during which these convulsive attacks are *most liable* to supervene; and, with very few exceptions, it has been the case in those instances which have fallen under my own immediate observation. Only two cases of this disease have occurred in my practice, in which it continued after the appearance of all the deciduous teeth; and this fact coincides with the experience of Hamilton, North, and other authors on the subject. Most of the German writers, who describe the complaint under the name of "Thymic Asthma," state, as the usual period for its appearance "from the age of three weeks to eighteen months, but more particularly between the fourth and tenth month."

Dr. Copland limits the time to the age of three or four years, whilst Dr. Hugh Ley saw one case at four or five years, and another between six and seven, combined with extensive disease of the lungs.

Porter¹ witnessed an exceedingly well marked example of this malady in a child nearly six years old, when recovering from hooping cough.

The period of dentition varies occasionally to a considerable extent, some infants being born with teeth, others cutting them at the third or fourth month, whilst in others again, the teeth do not appear until the nineteenth or twentieth month, of which two instances have come under my own notice. Dr. Armstrong, in a pamphlet "On the Diseases of Children," mentions that he met with two cases in which no tooth appeared until the children were *two* and *two and a half* years old respectively, and in both instances the molars were first observed. In one case, in which I was consulted, the child, aged seventeen months, had been affected by laryngismus during the last seven months, and was carried off by a fatal paroxysm, before a tooth had shown itself in either jaw.

Dr. H. Davies remarks that the usual period of infantile life in which children are most likely to suffer from this complaint, is "from seven months till two and a half years of age, but that the greater number occur from the tenth to the fourteenth month." A case, however, came under my care, in which the

¹ On the Larynx and Trachea, 1826.

first symptoms of this disease appeared at the age of two and a half months, the patient being otherwise a fine healthy male infant, reared by hand; in this instance, it proved fatal at three and a half months.

The opportunity of witnessing an attack of this complaint, in the infant of a medical friend, which was only *two days* old, has also been afforded me. In this case the spasmodic action of the glottis, with loud crowing inspiration, were very apparent, and evidently depended on retained meconium, producing spinal irritation. A purgative, followed by anti-spasmodic remedies, speedily removed all the symptoms.

Not long since, I also heard the crowing inspiration in a newly born infant, within a few hours after its birth. The labour had been very lingering—indeed, it was so protracted that I was at length under the necessity of applying the forceps. The movements of the fœtus had scarcely been felt by the mother for the previous fortnight, and when the child was born, its respiration was very feeble. Soon after, a strong mucous râle was heard in the trachea, and a large quantity of viscid mucus was thrown off. A few hours later, a peculiar noise in the respiration was noticed by the relatives and the nurse, which they described as a kind of *crowing*,

and I had, myself, speedily an opportunity of witnessing it, its peculiar character being very distinct. In this case, however, the symptom was unattended by any apparent feeling of distress; there was no appearance of choking or convulsions; and there was no discoloration about the lips. The respiration was natural, but the noise frequently recurred for more than three weeks afterwards; it generally came on when the infant was fatigued by crying, or much troubled with flatulence, and was especially remarked whilst it was affected for a few days by jaundice and disordered bowels.

Sir H. Marsh also mentions a similar case of this complaint, in which the infant was attacked *three days after birth*, with a laryngeal spasm, and crowing inspirations of severe character, the paroxysms recurring at intervals until the third month. The disease again returned between the fifth and sixth month, with general convulsions, but as no benefit resulted from any treatment, the child was removed to the country, when all the symptoms immediately ceased.

In Dr. Underwood's work, a case is likewise reported as occurring *fourteen days* after birth.

An affection, closely resembling spasm of the glottis, if not identically the same complaint, may be caused, *at any period of life*, by local or mechanical agency; but it must, I think, be considered a peculiar

disease of infantile life, when it follows as the result of *constitutional* irritation.¹

The *glottis*, owing to its important functions, is endowed with such exquisite sensibility, that any irritation in the parts closely adjacent, whether the result of inflammatory action, or of œdematous swelling, the inspiration of a noxious gas, or the accidental admission of any minute foreign body within the aperture, may occasion such a continued spasmodic closure of its margins, as to produce death in a few moments, by asphyxia. The classical story of Anacreon's death from a grape stone, is familiar to all, and the inspiration of the vapour of a burning sulphur match for one or two seconds only, or of carbonic acid gas, demonstrates at once the powerful action of impure air on the glottis itself. A physician of eminence has mentioned, as an illustration of this point, that any attempt on his part to swallow either dry bread or cold water, invariably produces a convulsive spasm of the glottis; and most persons have, no doubt, experienced the effect of an accidental entrance of even the smallest portion of food or drink within the glottis, or according to the common phrase,

¹ Porter states that, "Laryngismus occurs as the accompaniment of disease in the larynx in all its forms, and in subjects of all ages; *but without the presence of some morbid action*, it is not met with, except in the child, and occasionally in the hysterical female."

of its "going the wrong way," and of the severe convulsive action of that part which it occasions.

PECULIAR PREDISPOSITION.

There can be no doubt that Laryngismus attacks individuals of certain families, in preference to those of a different constitution, and this fact accords with the peculiar liability noticed in some persons with reference to other diseases. Thus, for instance, *Croup*, which is also an affection of the respiratory tube, is known occasionally to attack several children of the same family, although the individuals may be residing at the time in different localities, whilst others resident in the neighbourhood shall escape.

A remarkable instance of this predisposition in the different members of the same family to be affected by a peculiar and even rare disease, is one which I have quoted in another publication¹—viz., Diphtherite of the Larynx, or the 'Angine Couenneuse' of the French authors. The Empress Josephine died from the effects of this disease; her daughter Hortense was for some time subject to it: the son of the latter died from an analogous complaint (croup), whilst her nephew, the Duke of Leuchtenberg, and

¹ On Tubular Expectoration from the Bronchi. (Vol. ix., Med. Ch. Trans.)

late consort of the Queen of Portugal, also fell a victim, many years afterwards, to an attack of diphtherite.

The same peculiarity prevails in regard to Laryngismus, but locality evidently possesses great influence in developing the malady. It is not unusual to find that three, four, or five infants in the same family are successively attacked by this complaint, and I have myself observed five such cases to occur in one family. Dr. Henry Davies mentions the fact of *four* children in the same family being attacked, *three* of whom died. Dr. M. Hall lost three infants in one family from this disease. Mr. Pretty and other practitioners relate similar instances; but the most striking example which has come to my knowledge, was communicated to me by Mr. Powell, of Great Coram Street, in which only one of thirteen children in the same family escaped the disease, and in four of them it proved fatal. Respecting *hereditary predisposition*, practitioners are as yet scarcely in a position to decide, as the attention of the profession has only, within the last few years, been forcibly attracted to the complaint in question.

Several writers have asserted that families of a *Scrofulous diathesis* are peculiarly liable to this complaint, but this fact is doubtful, and is not borne out by

my own experience. In the first place, I know of no appellation in the medical glossary which appears to possess so much latitude in its signification as the one alluded to. *Phthisis* has been generally held to be a *certain* evidence of such state of constitution, but it has been shown by *Stokes*,¹ that it may be completely *accidental*, and that we meet with this disease in persons, *not* of strumous diathesis, and who have no hereditary predisposition to tubercle.

Sir James Clark mentions also that Tuberculous Cachexia may be *acquired* at almost any period of life from infancy to old age.² *Dr. Todd* considers that the strumous constitution is *generated* *often* by dyspepsia, and remarks that, "it betokens, indeed, little familiarity with scrofula, to connect it with any particular temperament, for it belongs to *all* temperaments — to the sanguine as well as the phlegmatic, to the nervous as well as the melancholic, and to all their varieties and combinations."³ Indeed, such is the extensive range of this term, that *epilepsy* has been ascribed by some to "scrofulous diathesis," and the writer of the article on that subject in the "Cyclopædia of Practical Medicine" asserts that "*it is a*

¹ On Diseases of the Chest. (p. 439.)

² Treatise on Pulmonary Consumption and Scrofulous Diseases.

³ Cyclopædia of Practical Medicine. (Art. "*Indigestion*,")

certain manifestation of the disease." Other authors have maintained that "*Struma is UNIVERSALLY prevalent in this country.*"

As far as regards the aggression of Laryngismus in connexion with the Scrofulous constitution, I have not myself been able to trace any *peculiar* relation between them, for although in some cases the children were, perhaps, of that diathesis, the symptoms of it were by no means strongly marked, and in the majority of my cases the fact was not observed at all. On the other hand, in infants who had decidedly an hereditary scrofulous constitution, marked by evident strumous diseases, no tendency to spasm of the glottis was noticed. In the large number of children, which for many years formerly came under my notice in the Infirmary of St. Giles, frequent instances were observed, in which enlarged indurated cervical glands extended below the clavicle, and from their extent, and consequent effect upon the general health, at length caused a fatal termination, yet they were unaccompanied by the slightest appearance of laryngismus. In others again, the disease attacked in succession the different joints, and gradually invaded the neck, thorax, groins, vertebræ, &c., without producing any signs of this complaint.

We often observe, on the contrary, that strong,

robust infants, without the least apparent scrofulous taint, have suffered severely from these spasmodic attacks.

As a more general indication I should venture to say that infants of a *nervous* temperament, who are easily excited, who are awakened by slight noises, and who are not satisfied unless they are kept constantly "on the move," are much more susceptible of this affection than other children.

I will now proceed to consider the different prominent symptoms of this disease seriatim, and to examine the principal causes by which it may be produced.

CLOSURE OF THE GLOTTIS,

As the result of convulsive action, may be either *partial* or *complete*.

Where but slight partial constriction of the rima glottidis supervenes, the catching of the breath is of a temporary nature, and there is then only a momentary suspension of the respiration. This apparently trivial symptom, however, should not be neglected, or passed over as of little importance, for it is frequently a prelude to a much more severe form of the complaint. The general health of the infant may be apparently good, no cough or febrile action

may be present, and as the little patient is observed to thrive well, and to be in excellent spirits, the parents are thus thrown off their guard, and have not the slightest suspicion of approaching danger—" *Latet anguis in herba.*" At this very period careful observation would frequently make us aware that the alvine secretions are not of proper character, either as to colour or consistency. It is not an unfrequent occurrence for the medical practitioner, when consulted at an after period, to hear of this " *catching*," by mere accident, as a symptom of no importance, or to find out its previous existence only by a cross examination of the nurse.

The time at which it is generally observed is in the morning when the infant awakes; and it has often been a subject of argument whether this is cause or effect. As the disease gains strength, the infant is observed to awake suddenly in agitation and distress, gasping for breath, with a convulsive effort to inspire, which is, at length, accomplished with a crowing sound or sibilant whooping noise, followed by a cry of terror; the head is thrown back, the face red or livid, suffocation appearing imminent for some seconds; in some cases, as before observed, there is a violent expulsion of flatus.

I have often been assured by persons who were carefully watching an infant suffering from this com-

plaint, that they generally could observe some certain precursory evidence of an approaching paroxysm previously to the child's awaking. I have myself also, in some instances, attentively observed infants subject to this disease, whilst asleep, and have seen the respiration most tranquil within a few seconds of a paroxysm; but, in others again, there has previously been an evident mucous râle, with every indication of an approaching attack.

It is the opinion of many physiologists, that during sleep there is an accumulation of "sensorial power" and nervous irritability in the system, which renders the danger of a convulsive attack more imminent at that time, and hence may be explained the fact that epileptic patients are so often seized with a fit, after a long, quiet, and sound sleep.¹

I believe, however, that in some cases of Laryngismus, the full, deep drawn inspiration which so often accompanies the act of awaking, may also produce the contractile spasm.

In some infants this nervous irritability exists to so great an extent, that the slightest noise, such as the rustling of paper or silk in the room, will produce a paroxysm—a most distressing circumstance, as the child, if asleep, is necessarily awakened by the least movement.

¹ This was a matter of great difficulty to Dr. Cullen, who attempted to account for it, as a curious fact.

Closure of the glottis exists to a certain degree, as an attendant symptom of hooping cough, hysteria, and some other complaints; but there is this essential characteristic distinction, that in them it never proceeds to the same extent as in infantile laryngismus.

This symptom is occasionally observed in the adult as indicative of some local affection of the larynx. In an interesting paper read at the Medico-Chirurgical Society, by Dr. Budd, symptoms precisely similar to those of laryngismus were described as having occurred in three adults, who were convalescents from fever in King's College Hospital. The patients who had sufficiently recovered to allow of their walking in the wards, were attacked suddenly with difficulty in respiration, without having previously suffered from any local pain or distress; and in the course of a few seconds they expired with every symptom of suffocation, although the operation of laryngotomy was performed as speedily as possible in each case.

Similar instances, which occurred without any previous symptoms, and were followed by the same termination, were related by other Fellows of the Society. A case of this description was noticed also, not long since, in the St. Giles' Infirmary in a patient recovering from fever.

Erysipelas and an œdematous state of the glottis were represented to have produced the attack in each case, as well as its fatal result.

Sudden application of cold to the body, and more especially to the head, will cause a succession of short inspirations, with a sensation of constriction about the chest; and "holding the breath," from fear, anger, or any other strong passion, will occasionally produce a paroxysm of laryngismus, if there be already a predisposition to the complaint.

A slight straining effort by the infant may also produce the paroxysm; as an important preliminary condition for the power of straining is "holding the breath;" thus the attempt to expel flatus, or constipated fœces, from the bowels, will be very likely to act as a direct cause of this spasm. Fretting, crying, drinking, coughing, or any quick movement in the infant, may also produce an attack.

It has been stated by Cheyne,¹ and some other authors, that the pathognomonic symptom of laryngismus, is the *crowing inspiration*; but I have already mentioned that numerous mild cases occur in which this noise is not heard, and that in the most fatal form of the disease it is also absent.

Spasm of the glottis varies much in its intermissions, as it may cease for months, and then recur.

¹ Essay on Hydrocephalus. 1808.

Two cases have fallen under my notice, in which a year had intervened between the paroxysms.

MUCOUS RATTLE IN THE LARYNX is in some cases observed as a prelude to the more striking symptoms of laryngismus, and should therefore always excite the attention of the medical practitioner. It is not the mucous rattle of bronchitis which is heard in the chest, but appears to be confined to the upper portion of the larynx, and is not persistent in its character; it recurs at different periods of the day or night, occasionally being absent for two or three days together, and resembles precisely the noise often heard in the throat of newly born infants, which is dependent on mucus in the trachea.

This symptom is not uncommon in the intervals between the paroxysms, and might perhaps be expected as a result of the irritation of the mucous membrane lining the glottis and its vicinity.

It frequently precedes the paroxysm, and serves to denote the speedy accession of an attack; resembling somewhat a similar rattle noticed previously to a paroxysm of hooping cough. It had been remarked by Dr. Mason Good, as well as by Dr. Hugh Ley, and in one case, the latter author observed it to continue with little interruption for some months.

In the case of an infant, whose elder sister and

brother had both been the subjects of this complaint, (the latter having been suddenly cut off by it,) this peculiar noise was remarked from the fourth to the sixth month. The other children had been reared by hand, but for this infant a wet-nurse was procured. The rattle was heard at the upper portion of the larynx *only*, and did not proceed from the other air tubes; there was neither cough nor catching of the breath at this time, and the noise came on and disappeared without any apparent cause; it was, however, most observable on the infant's awaking from sleep. The general health and spirits were excellent, but the alvine secretions were of an unnatural colour, and often much curdled; the infant was also very excitable, and not contented unless when carried about. I may mention as a coincidence, if not an illustration of cause and effect, that on the wet-nurse meeting with an accident, which obliged her for a time to discontinue all stimulants, the infant was during this period free from the symptom described. At a subsequent period, whilst the child was absent from London, decided though mild attacks of laryngismus appeared, and there can be little doubt, that with such a strong predisposition to it, the paroxysms would have proved more serious, had this child also been reared by hand.

COUGH is not unfrequently heard in cases of laryngismus, but it is by no means a necessary accompaniment. Even in *croup* this symptom is not always present, as cases have been observed without any cough, by Heim, Michaelis, and others. (*London Medical and Surgical Journal*, 1835.)

SPASMODIC CONTRACTIONS OF THE EXTREMITIES.

A contraction of the adductor muscles of the thumbs, fingers, and toes, is a common symptom in this disease, not only during the paroxysms, but in some cases remaining permanent for days, and even for weeks consecutively. The thumb is drawn inwards, across the palm of the hand, the fingers being closed over it; the toes are turned downwards, and, in some cases, the wrists and ankles are similarly affected by this contraction. In the latter instances, the parts are swollen and painful to the touch, and more than once I have observed on their surface red inflammatory patches. Occasionally, I have also seen the thumb and some of the fingers bent inwards, whilst the others were, at the same time, rigidly extended. In Cases 2 and 3 it will be observed, that the child was gradually enabled to use its fingers, one after the other, whilst the constitutional symptoms were as progressively becoming ameliorated. In a case which was under my care, the thumb of one hand remained drawn in for six

weeks after the suffocative paroxysms had ceased ; and, in another case, it continued in the same position during four weeks.

This spasmodic contraction appears in the majority of cases, and will be found equally in strong robust infants, as in those which are weakly. From my own observations, it is not influenced altogether by the severity of the paroxysm, since it is seen when the attack is of a very mild character. Neither are the contractions solely attendant on an advanced stage of the disease, but in some instances they form one of the earliest symptoms. In numerous instances the thumbs alone are thus affected ; and, as a general rule, the hands are frequently contracted when the feet are not so ; but the spasmodic affection of the feet seldom, if ever, is seen without being preceded or accompanied by that of the hands. In Case 4, it will be noticed, that when the paroxysms of laryngismus were severe, these contractions were absent, but they appeared on the amendment of the laryngeal affection. The fingers can occasionally be extended for a time, but they immediately resume their former bent position when left to themselves.

Dr. John Clarke looked upon this accompaniment when of temporary duration, as “ a mere expression of agony, and considered the bending of the hand

and foot, when more persistent, as indicative of pressure on the brain." — (*Commentaries*, p. 131.)

It is, however, generally allowed at the present time, that the brain itself is not the cause of this muscular spasm, but that it depends on some morbid condition of the "medulla oblongata" or "medulla spinalis;" and it is a question whether the latter may not alone be sufficient to cause such a result.¹ There are some other diseases in which this symptom exists, though in a less permanent degree, and wherein the encephalon can hardly be supposed to be directly implicated.

Derangement in the function of *assimilation*, or the proper conversion of food into healthy chyle, is well known to occasion, in some particular cases, irritability of the muscular fibres, severe cramps, and temporary spasmodic contractions of the extremities: in children, who are beyond the age of dentition also, we sometimes observe, that when the secretions of the bowels are vitiated and unhealthy, the same contracted state of the fingers and toes supervenes.

In severe spasmodic attacks of the intestines, the same affection may be occasionally noticed, and also in simple irritability of the mucous membrane,

¹ In hydrophobia and tetanus we have examples of the spinal cord and medulla oblongata being intensely affected, whilst the brain altogether escapes the influence of the disease.

attended with diarrhœa and tenesmus. In the case of a boy aged eight years, whom I attended, and who was suffering from bilious diarrhœa, the contraction of some of the fingers of each hand, and of the toes, continued without any remission for upwards of three days. In my note book, also, I find the memoranda of a case which illustrates this fact. In February, 1841, I was requested to see a child aged two years and a half, who had been awakened suddenly in the night by severe pain in the hands and feet, and they were observed to be much contracted, and of a blue colour. These contractions gradually disappeared after a period of three or four days, from the use of purgatives. On May 9th following, the child was attacked in a similar manner in the afternoon; there was not the slightest symptom of cerebral or laryngeal disturbance, but the thumbs were drawn across the palms, and the large toes towards the soles of the feet, the parts being turgid and discoloured. The child had been fed daily, I found, with meat and beer—these were immediately discontinued, and a farinaceous diet, with broth, substituted, instead; a powder was given, consisting of two grains of calomel with three grains of rhubarb, and five of magnesia; the spine was well rubbed with opodeldoc, and a hot bath was afterwards used.

The spasm was speedily subdued on the action of

the powder and the employment of the embrocation; and the latter remedy was always afterwards resorted to with immediate good effect, whenever any tendency to the contraction was observed.

In the Asiatic cholera likewise, and in dysentery, similar rigid cramps are sometimes observed.

There are also cases of *hysteria* in which permanent contraction of the fingers and toes occurs, and in such instances, the irritation of the spinal cord occasionally gives rise to clonic spasm of the trunk, as well as of the upper and lower extremities. A case of this description was published in the *Lancet* of July, 1847, by Mr. Wilkinson, of Barton, Lincolnshire, in which the contractions remained permanent for a period of six years.

Should it then be found that this spasmodic contraction is occasionally the effect of irritability of the *spinal* centre, and that such symptom may occur without the medulla oblongata being necessarily affected, it would materially influence our prognosis. I can state that, in several cases, I have observed this contraction to a great extent without any accompanying signs of cerebral disturbance, and although it continued after all other symptoms had ceased, I felt much less apprehension from its presence than formerly, when I deemed it a certain precursory indication of cerebral convulsions. Still it must not

be forgotten that the same morbid irritation of the spinal cord may speedily extend upwards to the encephalon, and then produce more unfavourable results.

The spasmodic contraction of the muscles at the back of the neck, causing opisthotonos, may also depend on irritation of the spinal cord; in some rare instances, the head remains bent back towards the spine, without any relaxation, for days together; and, in Case 2, it thus materially interfered with the act of suckling.

According to Dr. Hugh Ley's theory, these contractions are not dependent on convulsive action of the flexor muscles, but rather on feebleness of the extensors.

GENERAL CONVULSIONS.—I have already alluded to these phenomena as an occasional, and even frequent, though by no means a necessary accompaniment of laryngismus. They are met with, during the period of dentition, when no spasmodic action of the glottis is observed; and it may be therefore readily supposed that when the latter complaint does exist, there is a still stronger tendency to the occurrence of general or cerebral convulsions.

They are sometimes found to precede the spasmodic affection of the glottis; at other times, to come on simultaneously with it, and on more rare occasions to follow after its cessation.

Laryngismus becomes of course more dangerous in its character with such a complication, and the treatment must be necessarily, in such cases, very energetic. I will not, however, enter at present more fully into this part of the subject, as I shall have to consider it again under the head of "Causes."

DISORDER OF THE ALVINE SECRETIONS.—It will generally be found that one of the earliest symptoms in this disease is a disordered state of the bowels. In all the cases (with one or two exceptions) which have fallen under my immediate notice, the alvine evacuations have been of a putty or clay-like character, without the proper admixture of bile, whatever may have been the aliment of the infant. In the exceptions alluded to, the motions were of more fluid consistence, and contained bile, but they were of a dark green hue, and much curdled. Acrid secretions, fermentation, acidity, flatulence—in fact, all the usual symptoms of indigestion are found to accompany this condition of the hepatic system; but as the dejections evince a healthy return of its functions, so will the symptoms of the disease improve in a corresponding measure. In children predisposed to the complaint, it is therefore of the utmost importance that their evacuations should be frequently and carefully examined, and on any deviation from the

natural state, particularly in those individuals who are naturally of a constipated habit, precautionary measures should at once be adopted.

CAUSES OF THE DISEASE.

The *direct or immediate cause* of laryngismus is now generally admitted to depend on "spasmodic closure of the entrance to the air tubes," but the *remote or primary cause* is still a "*vexata questio*" with authors and practitioners. It would be erroneous to assert that one particular cause invariably produces the complaint; but admitting that it may arise from various sources, it is more than probable that some one of these may be found to originate the disease, much more frequently than all the others taken together. Perhaps a combination of two or three different causes may be required to place the nervous system in such a state, that the infant shall become liable to this convulsive affection.

Thus we know that infants, during the period of *Dentition*, are peculiarly obnoxious to convulsive attacks, and that any unusual irritation of the gums at this age may produce them. An unusually large quantity of food, especially if it be of an indigestible nature, taken into the stomach quickly, will also bring on both local and general convulsive action; whilst the presence of worms, or of any acrid and

irritating substance in the intestines, may occasion the same results. Sudden retrocession of any eruptive complaint, especially of those on the scalp, has been known, also, frequently to produce a similar effect.

CEREBRAL CAUSE.—Dr John Clarke maintained “that in every kind of convulsion (be the remote cause whatsoever it may) the brain is at the time originally affected either directly or indirectly.”¹ The spasm of the glottis was regarded by him as essentially dependent on inflammation or vascular congestion of the brain, and the principal remedies which he advised were intended to subdue such a condition of that organ. This opinion, dictated by so practical a physician as Dr. Clarke, had for several years great weight with the profession, and has led undoubtedly to the employment of very active depleting remedies in the treatment of this complaint. Mr. Pretty has also attributed a cerebral cause to the disease, and adopted the term, “*Cerebral Croup*.”

It is of the utmost importance that practitioners should come to some decision upon this point, seeing that it involves the whole method of treatment of the disease, and that in the event of Dr. Clarke's opinion being found erroneous, it would prevent the

¹ Commentaries, p. 90.

employment of measures which might prove very injurious instead of beneficeial.

The term "Cerebral Congestion" is frequently employed by various authors to express entirely different states of the system in infants. Some attribute to it almost all the phenomena, which, by others, are considered as owing their origin to a peculiar "*Irritability*" of the nervous centres. Both of these terms, however, appear to be employed in a conventional manner, to express a morbid condition of the cerebro-spinal system, without exactly defining what it really is. Some writers on the diseases of children have fairly owned that they are unable to state what are the peculiar symptoms of cerebral congestion, whilst others doubt its existenece, or at least, regard it as quite a secondary symptom.

Other authors have taken it for granted, that the occurrence of general convulsions simultaneously with these spasmodic constrictions of the glottis, proves that the cause of both symptoms must necessarily exist in the same organ. From numerous observations made by different competent observers on this subject, it appears much more likely that cerebral or general convulsions are often an *association* with laryngismus; and it is not at all surprising that a paroxysm of the latter complaint should sometimes merge into the former, when we consider

that the closure of the glottis, by preventing for a time the admission of air into the lungs, and thus causing a temporary asphyxia, may have the effect not only of producing some congestion, but likewise the passage of dark and improperly aerated blood through the cerebral vessels.

If careful observation be made respecting this point, I think it will be found, in all cases, not complicated with cerebral convulsions.

Firstly,—That there are not present the usual symptoms of congestion of the brain.

Secondly,—That in the great majority of cases, no unusual pathological appearances in the brain are met with after a fatal termination from spasm of the glottis.

Thirdly,—That the remedies most successful in this complaint are not those which are usually employed in cerebral congestion; whilst, on the contrary, those which are then indicated, have frequently been productive of great injury in the treatment of laryngismus.

It will of course be necessary to adduce proof as to the accuracy of these facts.

It has recently been discovered by physiologists, that injury or disease of the cerebrum, or of the cerebellum, *alone* will not produce convulsions, but it is requisite that the membranes of the brain, the me-

dulla oblongata, or medulla spinalis, should be first implicated. Serous effusion into the ventricles of the brain, or congestion of the cerebrum, may however, in a *secondary manner*, prove the cause, according to Dr. M. Hall, and other writers, by pressing on the medulla oblongata.

General convulsions themselves often appear to be dependent on other causes besides congestion of the brain—as, for instance, in cases of worms in the intestines; here spinal irritation extends suddenly to the medulla oblongata, and convulsions ensue; but in such cases a good anthelmintic purgative will frequently remove the worms and stop the convulsions at the same time. There are cases of this sudden spasmodic attack of the glottis occasionally met with, both in the child and the adult, in which the brain itself is *evidently* not the primary organ affected. Dr. M. Hall quotes a case of “spina-bifida” in which pressure on the tumour immediately brought on a croup-like convulsion. Local irritation of the pneumogastric nerve has also been reported by more than one author, as producing the crowing inspiration.

In the Registrar General’s weekly report for June 10, 1848, two cases of death from spina-bifida are recorded. In one, the fatal termination was preceded by “*laryngismus*” and “convulsions:”—in the other, by “convulsions” alone.

1. The usual symptoms of congested brain are not met with in simple uncomplicated cases of spasm of the glottis: the infant is generally seized with this convulsive stricture suddenly, without previous stupor or lethargy, pain in the head, fulness of the external veins, or, in fact, any signs which are usually the harbinger of such a condition; on the contrary, the child is often at the moment of attack cheerful and gay, whilst in many cases it gives proof of greater nervous excitability than usual. In the majority of cases there is not even the short warning which we observe previously to the commencement of a paroxysm of whooping cough. Cheyne from his experience "did not consider that this disease depends in any way upon cerebral excitement." North says, "In the great majority of instances we have no proof of affection of the head." Sir H. Marsh remarks, "It is more than doubtful, whether at its commencement the brain be at all involved."

The CO-EXISTENCE of laryngismus with cerebral convulsions will, however, in some cases, be readily admitted; but the latter even, according to Dr. H. Ley, "are generally slight and tremulous, rather than epileptic." I have, nevertheless, seen them not unfrequently of a much stronger character, the veins of the forehead and scalp being distended, the fontanelle raised, the countenance livid, the lips and

tongue blue, the latter protruding from the mouth, with frothing at the lips, and rigidity of the limbs.

Still it must be borne in mind that *asphyxia*, whether caused by hanging, drowning, or any other method which prevents the access of air into the lungs, will often produce the same convulsive symptoms; and those which are caused by a fatal hæmorrhage are not very dissimilar.

2. In examinations after death from laryngismus, we do not meet with such appearances as would denote the previous existence of cerebral congestion, sufficient at least to cause a fatal termination. In the majority of cases of sudden death arising even from any other cause, we might expect to find turgescence of the cerebral vessels, but in some instances where laryngismus has ended fatally, so little visible effect of this description is noticed, that we may feel somewhat surprised at the circumstance. In those cases where the infant dies suddenly, without any accompanying cerebral convulsions, this absence of congestion is remarkable.

Dr. Hugh Ley states, that as to its necessary complication with convulsions, "he has been able to trace little in the symptoms of the disease, in the influence of remedies, or in the *appearances on dissection*, to countenance, much less to establish, such relation." Dr. Merriman has also added his testi-

mony, that "in two cases of the kind not the slightest appearance of cerebral affection could be discovered in either of them."¹

In a very healthy and robust male infant whom I attended for this complaint, and who was suddenly cut off by a paroxysm, the most minute examination of the brain could detect nothing unusual in its appearance, and no signs of congestion or effusion were observed. The cervical glands were not larger than usual, and the bronchial glands seemed in their natural condition; the par vagum and recurrent nerves were also of natural appearance, and not red or compressed. In another case, also, which I examined, no unusual appearances could be traced in the brain, chest, or throat.

3. The treatment which is applicable to congestion of the vessels of the brain, or to an inflammatory condition of its membranes, if employed in cases of laryngismus, will be found not only inefficacious, but will, in many instances, prove absolutely prejudicial: I allude, of course, to cases unattended by cerebral convulsions. I have even successfully treated several complicated cases without any depletion by blood-letting; whilst in others, the application of a few leeches lowered the condition of the little patient, without any corresponding amelioration of the symp-

¹ Edition of Underwood, p. 139.

toms. This agrees with the experience of Dr. H. Ley, who remarks, that he tried "bleeding and repeated doses of calomel, not only without advantage, but with manifest injury," (p. 23.)

One of the most severe cases of laryngismus which has fallen under my care, occurred in a delicate infant, and was complicated with the hydrencephaloid state; in this instance, the convulsive paroxysms were of frequent occurrence, but certainly were not dependent on turgescence of the cerebral vessels, and no practitioner of experience would think of applying even a single leech, or depleting in any manner, under such circumstances.¹

We are told, by a talented physiologist,² "that convulsive movements may depend sometimes upon the nervous centres being in a very irritable state, which causes very slight irritations (such as would be otherwise inoperative) to excite violent reflex or convulsive movements."

Thus the simple irritation caused by the pressure of the rising tooth against its investing membrane, or by the passage of undigested food through the intestines, would not alone be sufficient to cause the

¹ It was stated, not long since, in a medical society, by an experienced surgeon, that "every case of laryngismus, in which he had applied leeches to the head, died."

² Carpenter—Manual of Physiology.

violent convulsive action which sometimes ensues, were the spinal cord not previously in a peculiar and morbidly excitable state.

The effect produced upon the glottis in some paroxysms of laryngismus, during which the edges of this aperture appear to be alternately drawn together and relaxed in rapid succession, would seem to be explained by the observation of Müller: "A high degree of irritation in the spinal cord by violent impressions on sensitive nerves, sometimes gives rise to rapidly repeated rhythmic contractions of the muscles."—*Elements of Physiology, translated by W. Baly, M.D.*

Some writers have advanced the hypothesis that this singular complaint owes its origin to HYDROCEPHALUS.

Dr. Monro describes a species of acute Hydrocephalus which was ushered in by a spasmodic action of the glottis, and Dr. Cheyne relates the case of a child who died of hydrocephalus (?) after a few days' illness, and who had suffered for several nights from frequent spasms of the glottis, and very short and threatening fits of suffocation, attended by crowing, and purple hue of the face. From the description of this case, taken altogether, very strong doubts may be entertained whether it really was of the character supposed, since the only symptoms

narrated are those of laryngismus—viz., spasms and convulsions, with pasty motions, unaccompanied by bilious secretion; the infant, not a year old, had never shown any material symptoms of being ill until after the first fit had made its appearance. I do not, however, wish to imply that such a state of the brain may not be occasionally accompanied by spasm of the glottis, with its usual whooping noise; but it must be conceded that in the large majority of cases of “effusion on the brain,” this symptom is altogether absent. Cerebral convulsions, on the contrary, are a frequent effect of such a condition; and Dr. Cheyne has attempted to institute a diagnosis between those produced by water on the brain, and those which result from other causes.

“When convulsions arise from hydrocephalus,” Dr. C. says, “one side is generally more affected than the other, one arm or foot being with regularity retracted and flung out again, while the other is palsied, or perhaps spasmodically retracted; the eyes are suffused; there is often a circumscribed deep blush on the cheek, and the breathing is slow and irregular; sometimes, however, it is convulsive. Whereas, in convulsions, *not radically depending upon organic disease of the brain*, both sides of the body are equally affected; the head is thrown back,

the shoulders elevated, the eye is ghastly, the white of the eye bloodless, and the pupil often dilated; the eye not unlike its appearance after death, and the whole countenance is flushed. In the intervals between the convulsions we have the best opportunity of discovering their origin," (p. 29.)

The latter definition will apply more readily to the convulsions which are sometimes attendant upon laryngismus than the first, although much faith cannot generally be placed in such diagnosis. I am more disposed to agree with Gölis,¹ and those writers who think that laryngismus, especially when complicated with cerebral convulsions, may act as a *predisposing cause* of Hydrocephalus: for when the constant state of irritation in which the brain must be kept by the reiterated attacks of this complaint, is considered, as well as the congested state of the cerebral vessels during the partial asphyxia, it is by no means surprising that in some of these cases so much inflammatory action should arise, as to produce effusion of water into the cavities of the brain. It must also be taken into consideration, that robust, healthy children, are not often attacked suddenly by hydrocephalus, as is the case with laryngismus: premonitory symptoms, such as

¹ On Hydrocephalus Acutus, translated by Gooch, p. 71.

unusual drowsiness, emaciation, irregular febrile attacks, &c., are observed in the great majority of cases.

Hydrocephalus has been thought by Cheyne, and some other authors, to owe its origin generally to derangement of the abdominal viscera, by irritation, and more especially by inflammatory action in the mucous membrane of the intestinal canal, producing ulceration of Peyer's gland; the liver has, in many cases of this disease, also shown, on a post mortem examination, marked pathological appearances. I feel strong suspicions that some other cases of hydrocephalus related, as well as that just alluded to, were simple instances of laryngismus. Thus Dr. Cheyne, in describing one, remarks, "it would appear that hydrocephalic symptoms, arising from sympathy with disordered digestive organs, and *existing without any change of structure in the brain*, are sometimes fatal." Mr. Abernethy also examined the body of a child who had *unequivocal* symptoms of hydrocephalus, in which *the brain was found perfectly healthy, the only diseased appearance being in the bowels.*"—(*Surgical Observations*, Part II.)

It may be fairly inferred, I think, that laryngismus is sometimes complicated with, or followed by hydrocephalus, but in very rare instances does the latter act as a cause of this affection.

Neither are there any strong reasons for believing that an INFLAMMATORY CONDITION OF THE BRAIN, or of its membranes, gives rise to the complaint, as some writers have supposed; the symptoms are quite at variance with such a condition of that organ, and the successful treatment, in the great majority of cases, without local depletion, may be adduced as a proof that the disease depends upon some other cause, whilst the aggravation of the symptoms by the employment of strong antiphlogistic measures, will naturally lead to a confirmation of this opinion. *Irritability* is much more apparent, and is successively denoted in the intestines, the gums, the spinal cord, and the extremities.

The *pneumo-gastric* nerve is subject to various disordered actions with which physiologists are not yet fully conversant; and one of these is apparently connected with the presence of spasmodic closure of the glottis. This important nerve is allowed to be one of the principal exciters of the respiratory movements; and if an undue quantity of venous blood be present in the capillary vessels of the lungs, its action becomes much stronger and more apparent to the physiological observer. That some direct affection of it may be a cause of irritation, and even of partial closure of the glottis, is proved by the case which was narrated by Sir A. Cooper, of inflammatory

action of this nerve producing not only a convulsive or spasmodic cough, but also the peculiar whooping noise of laryngismus.

In the case of a young lady, whom I attended in the winter of 1846, in conjunction with Dr. Elliotson, a violent convulsive cough, which only appeared at long intervals, had gradually acquired this spasmodic character; its origin was obscure, and at this period there were no symptoms which excited apprehension, but in the course of a fortnight afterwards, the patient was awakened by a sudden sensation of suffocation, the usual whoop being cut short by a slight convulsive fit. A succession of these attacks followed, and they became much more serious in their character, strongly resembling the laryngismus of infants, but preceded by a loud cough. There was no complaint made by the patient as to any pain or uneasiness about the head, but the pupils of the eyes were observed to be contracted; in the intervals between the paroxysms, she expressed herself as feeling comfortable, was very cheerful and acute in her perceptions, but the convulsions became gradually more frequent, the sight was obscured, and a fatal termination occurred a few days after. Unfortunately no post-mortem examination was obtained.

This young lady had had hooping-cough some

years previously ; she was of a very anæmie habit, and it was not thought safe, therefore, to deplete, but blisters were applied to the spine and chest ; the system was brought under the influence of mercury, and cold spirit lotion was applied constantly to the head.

Bresehet found the colour of the pneumo-gastric nerves more yellow than natural in the autopsies of a great number of cases which had terminated fatally from whooping-cough ; whilst Gendrin remarked in another case, in which these nerves were found denuded by an abscess, that there had previously existed a severe convulsive cough.

Sir H. Marsh forms a conjecture that the seat of laryngismus may, perhaps, be found to exist at the origin of the pneumo-gastric nerve ; it must be admitted, however, that, connected with this part of the subject, there is still open a wide field for investigation.

ENLARGEMENT OF THE CERVICAL AND BRONCHIAL GLANDS. — Dr. Hugh Ley, in the work already quoted, has propounded a theory, that laryngismus “is not a spasmodic closure of the glottis, but a defective power in those agents whose office it is to open that chink,” (p. 103.) He considers that “the imperfect opening of the glottis is the result of absolute or relative want of power in the opening

muscles, and not of excessive and abnormal contraction of those which close the glottis ;” and when it is accidentally closed, he thinks that “it remains partially, or totally so, from some want of vigour in those antagonist powers which should again efficiently open that chink for the purposes of respiration,” (p. 112.) Dr. L. denies, therefore, the convulsive or spasmodic character of the disease, and attributes it rather to *paralysis* caused by pressure. “The cause of the crowing inspiration (says Dr. L.) is either an enlargement of the absorbent glands of the lungs, or a similar enlargement of the deep seated chain of cervical glands, known under the technical appellation of the ‘*glandulæ concatenatæ*.’” In some of the dissections which Dr. L. made of fatal cases resulting from laryngismus, he found the par vagum much compressed, and in more than one instance it was even flattened by such pressure.

The arguments brought forward by Dr. Ley do not appear to have met with many supporters, either among physiologists or those practitioners who are most conversant with the disease ; and many valid objections may be adduced in opposition to them. The facts against Dr. Ley’s theory are both positive and negative.

Numerous dissections, and those, too, carefully conducted by different practitioners, have not dis-

covered any particular enlargement of the glands described. I can add my own testimony also as to having searched, in more than one case, unsuccessfully for any such abnormal appearance.

In children who have died from other diseases, and who showed not the slightest symptoms of laryngismus, these glands have been found very considerably enlarged. Even when there is evident pressure on the pneumo-gastric nerve, this disease is not invariably the result of it. In the work of Messrs. Rilliet and Barthez, already mentioned, two cases are detailed in which the pneumo-gastric nerve was evidently suffering from pressure; the symptoms were widely different, however, from those observed in laryngismus, and the authors terminate the account of them with the following remark, "Nous n'avons pas observé la forme de suffocation qui résulte du spasme de la glotte, comme le Docteur Ley semble l'avoir constaté."

Were this pressure from the enlarged glands a frequent cause of laryngismus, it is difficult to comprehend why the attacks are often separated by *long intervals* in some cases, although the pressure continues the same. Such continued pressure would also act as a direct mechanical cause, whereas the history of the disease proves it evidently to be the effect of reflex action. Dr. Marshall Hall asserts,

moreover, "that such pressure would cause permanent paralysis, and constant closure of the glottis."

It is well known that indurated and enlarged glands in general yield very slowly whilst diminishing in size; yet some cases of spasm of the glottis, of a severe character, appear to vanish *suddenly*, on change of air, the exhibition of antispasmodic remedies, the evacuation of worms, or of large unhealthy motions, or on the cutting of a tooth.

Many of the cases are altogether of too transitory a character to allow of an explanation by the above theory; and the experiments of modern physiologists are almost conclusive against it, since they show that the inferior or recurrent laryngeal nerves, which alone govern the muscles of the glottis, are exclusively motor nerves, and that *irritation* applied even to one of them, will produce *convulsive closure* of that aperture, whilst cutting or compressing them renders the glottis and movements of the arytenoid cartilages inert or passive, but does not prevent ingress or egress of air, although they impede the former.

The general history of the complaint is likewise widely different from that of paralysis.

ENLARGEMENT OR DISEASES OF THE THYMUS GLAND have also been adduced as causes of laryngismus. Mr. A. Hood, of Kilmarnock, published in

1827 a paper in the "Edinburgh Journal of Medical Science," entitled "Cases of sudden death and affections of the head, originating from diseases of the thymus gland."

Drs. Kopp¹ and Hirsch,² of Königsberg, described the complaint under the appellation of Thymic Asthma; and, in 1836, Dr. Montgomery, in vol. ix. of the "Dublin Journal," communicated some "Observations on the sudden death of children from enlargement of the thymus gland." All of these evidently bear reference to the symptoms of laryngismus.

The thymus gland in the infant is of comparatively large dimensions. Its ordinary weight at birth is about 3iv, but is occasionally six or seven drachms; it is about two inches long, one and a half broad, and a quarter of an inch thick; but, of course, these dimensions vary in different children. It is not unfrequently found in healthy infants to contain in its cells a fluid of creamy colour and consistence.

Mr. Hood considers that a diseased state of the gland is the cause of all the symptoms; in his communication nine cases are given—viz., seven in children and two in adults — but, dismissing the

¹ Denkwürdigkeiten in der Artzlichen Praxis. (Band 1.) 1830.

² Hufeland's Journal, 1835.

latter, it appears that in those which were really instances of infantile laryngismus, two of the children “died immediately *after taking a hearty breakfast of porridge*,” one of them whilst in the act of stooping; and, in a fourth case, the child, before the convulsive attack came on, had taken “an *unusual quantity of porridge and buttermilk*.”

In Mr. Hood’s own child, aged eighteen months, which was evidently a case of laryngismus, the symptoms were always aggravated by swallowing liquids; the child was at length sent to the sea side, *and had only one attack after the change of air!*

The “pus-like matter” found in the thymus gland, might have been the creamy fluid which is observed in health. The dissections of the two German authors alluded to, differ from Mr. Hood’s materially, as they found “no trace of inflammation, induration, tubercular, or any other degeneracy; occasionally, on cutting the gland, an exudation of milky fluid took place; there was no abnormal state of the tissues, but hypertrophy alone.” Kopp, however, appears to have allowed a scrofulous origin in such enlargement of the gland, but the researches of Hachmann led him to a different conclusion. (Hamburger Zeitschrift.)

Mr. Hood’s explanation of his theory is, that “A strong effort is made to inspire, by which effort the

enlarged gland is made to obstruct the current of blood in the large veins coming from the head, in consequence of which the descending cava does not supply the stimulus of blood to the heart in sufficient quantity to produce dilatation." No explanation, however, is given as to the cause of "the strong effort to inspire," and on this, I conceive, hinges the whole question. I may observe that we have no certain evidence as to the exact weight of the gland in Mr. Hood's cases; in one of them he mentions that the *supposed* weight was 3ij, and in another instance it *was thought* to be two or three ounces.

Dr. Kopp attributes death in cases of laryngismus to pressure on the air-tubes.

Hirsch found the parenchyma of the thymus more hard and red than is normal, but the structure was healthy, and there was no trace in it of tubercles or suppuration: a milky fluid often ran out of the gland on dividing it. Its usual weight is stated by Dr. Hirsch to be from 24 to 28 grammes, but he has seen it after this complaint to weigh 45 grammes: the other appearances observed by Dr. H. were those of ordinary asphyxia.

Brera also adopts Kopp's view as to the cause, and states that he cured three cases by external frictions; and by administering, internally, antimonials, mer-

curials, iodine, and preparations of gold.—(*Annali Universali di Medicina, Omodei.*)

Dr. Montgomery gives enlargement of the thymus as “one of the occasional causes” of laryngismus, and thinks that it may depend upon general plethora, occasioned principally by OVERFEEDING; or upon enlargement of the gland as the result of actual disease. Dr. M. suggests that “the sudden distention of the gland prevents the return of the blood from the head, thereby suddenly producing cerebral congestion; pressure on the trachea, by which respiration is impeded, and on the important nerves in that situation, especially the sympathetic, the par vagum, and its recurrent branches; the affection is at least different from either ordinary apoplexy or suffocation, for it happens in an instant, generally without effort or struggle of any kind.”

Many of the arguments brought forward against Dr. H. Ley’s theory will, I think, apply to that of the enlargement of the thymus gland being the usual or common cause of laryngismus.

It would not be unreasonable to expect that such enlargement of the gland, and its consequent continued pressure against the trachea, would cause much more permanent effects than are visible in this complaint, and accordingly, in the cases quoted by Dr. Montgomery, from Lieutand, of

enlarged thymus in the adult, and in one seen by himself, it appears that the symptoms were in reality such as we might anticipate—viz., pain in the chest, troublesome cough, *continued dyspnœa*, and difficulty of lying on one side, all showing the effect of continual pressure, but which are not the symptoms observed in infantile laryngismus. May not the hypertrophy of the thymus gland, when seen after a fatal termination of the disease, depend more upon the frequent straining during the attacks, acting so strongly on these parts? It is well known that an affection of a neighbouring gland, “Bronchocele,” or hypertrophy of the thyroid, is frequently produced by violent exertions, such as long continued attacks of vomiting during pregnancy; and individuals accustomed to use the voice much, such as the Muezzins of the East, the drill masters in the army, and others, are peculiarly liable to this affection, according to Baron Larrey. It is, then, not unreasonable to suppose that such intense and repeated forcible action on the cervical organs, might produce similar results in the more tender tissues of the infant.

Allowance is, perhaps, not always made for the natural and progressive enlargement of this gland. It is stated, by Dr. Carpenter, that “the greatest activity in the growth of this organ manifests itself in the

human infant soon after birth; and it is then too that its functional energy seems the greatest. This rapid state of growth, however, soon subsides into one of less activity, which merely serves to keep up its proportion to the rest of the body; and its increase usually ceases altogether at the age of about two years."

The German authors adopt Kopp's explanation as to the cause of spasm of the glottis, but in examining the cases adduced by them, many appear to have occurred soon after "*weaning*."

The weight of the thymus gland, when hypertrophied, is given by the following authors as remarkable — by Kornmaul, 3xiv; Hirsch, 3ixss; Van Velsen, 3ix. In one of my cases, which proved fatal, the thymus gland I found weighed 3vj only.

Dr. West has related, in his Lectures, an interesting case of enlarged thymus, and hypertrophy of the heart, in a child aged six months. The gland was found to weigh $328\frac{1}{2}$ grains, its length being $3\frac{3}{4}$ inches, and the structure apparently healthy; the heart was as large as that of a child three years old. It is mentioned, however, by Dr. West, that the symptoms were not those usually observed in laryngismus; "the occasional occurrence of great difficulty in breathing;" "frequent cough and wheezing;" "diffi-

culty in deglutition;" "no distinct crowing ever observed," &c.

INTESTINAL IRRITATION.

I have already alluded to a deranged state of the stomach and bowels, as almost an invariable accompaniment of the disease, and generally one of the first indications of its approach.

I can safely affirm that I have never known more than two instances of the complaint to occur without the presence of such derangement; and it will be remarked, whilst perusing the works of different authors who have described this disease, that whatever the different supposed causes may be, to which they attribute its aggression, "a vitiated state of the alvine secretions" is a prominent symptom; some writers describing it as aggravating the disease, whilst others look upon such a condition as a primary cause.

In the generality of cases it has already been stated that the alvine dejections are found to consist of a thick pasty mass, of a pale colour, owing to the deficiency of bile—constipation being a frequent accompaniment. It is seldom that we observe decided signs of amelioration in the little patients, in regard to the spasmodic attacks, until the secretions

become of a less consistent character, and of a healthy bilious appearance.

Etmuller, in treating of this spasmodic complaint, ascribed the cause to "acidity or aerid secretions of a loaded stomach." Dr. Cheyne, again, says, "these spasmodic inspirations appear to be connected with a disordered stomach, and absence of bile in the bowels." Dr. Hugh Ley remarks, "that distention of the stomach, and upper part of the alimentary canal, is a common attendant upon this disease, is abundantly corroborated by my own observation and experience: this is commonly the result of injudicious feeding," (p. 93.)

Dr. Montgomery thinks that the plethora inducing hypertrophy of the thymus gland, "*is occasioned principally by OVERFEEDING.*" Dr. John Clarke attributes it to the same *cause*, for his "cerebral congestion," and adds, that "these attacks commonly take place *after a full meal*;" whilst Mr. North, in one of his cases, relates, "that derangement of the digestive organs was evidently the principal cause."

In three cases mentioned by Dr. West,¹ they all originated from some "*intestinal cause*:" in the first, it was the consequence of improper feeding in a child ten weeks old; in another, aged nineteen months, it followed the sudden suppression of a long continued diarrhœa; and, in the third, two

¹ Lectures.—*Medical Gazette*.

years and a half old, it appeared to depend on cerebral congestion, the consequence of habitual constipation.

In one of the cases reported by Sir H. Marsh, as occurring in Dublin, it is added, that "the ease was apparently owing to a *diet of* 'STIRABOUT.'" Dr. Underwood mentions that he knew some of the largest and finest infants he had ever seen, to die suddenly, within the month, immediately after the nurse had boasted of their having taken "three boatfuls of victuals."

Millar, in the last century, observed, that this disease "*most frequently seized those who had been lately weaned, and its violence fell principally upon the lower class of people, on those who were of a heavy leucophlegmatic constitution, who had voracious appetite, and whose diet consisted of erude, watery, vegetable food; the body, he also remarks, was generally costive, and the stomach and bowels often very much inflated.*"

Numerous other authorities for this fact might be quoted, were it necessary to produce additional evidence.

Flatulence, one of the invariable accompaniments of indigestion, is peculiarly liable in infants to originate a tendency to convulsive disorders. Even in the earliest weeks of life, how frequently is a strong sympathy observed to exist between the alimentary

canal and the facial nerves, as evidenced by the apparent smiles of the sleeping infant, but which are in reality simple convulsive movements, depending on irritation of the spinal nerves from flatulence, and conveyed by reflex action to a distant part of the system. Spasmodic closure of the glottis also frequently occurs when the infant is more than usually oppressed by flatulence, and terminates with its expulsion.

ATMOSPHERIC INFLUENCE.

Experience convinces us that this influence, if not alone sufficient to originate the disease, at least materially aids in keeping up the irritation which has been produced by other causes. This is amply proved by the fact, that on change of air, in many cases of laryngismus, the symptoms have *immediately* ceased, but recurred when the infant was brought back to its former residence. In more than one of my cases, this circumstance will be remarked.

The rare occurrence of this complaint in country districts, as compared with its prevalence in crowded towns, is another proof that atmospheric influence is concerned in the majority of cases, as one of the exciting causes. Medical friends, who had resided for upwards of twenty years in agricultural districts,

have assured me that they never saw, during that period, a single instance of laryngismus, but that since they had removed to London, several such cases had fallen under their notice.

Dr. Merriman has informed me of a striking illustration of the effect produced by change of air in this malady. The infant son of an eminent banker was attacked by laryngismus, and as all the usual remedies failed in subduing the symptoms, the child was removed to the country, with an immediate good result; a return to town after a short time brought back the paroxysms, which were again checked by country air, and after a *third* unsuccessful trial of a residence in London, the child was kept away from it for a considerable period, and then had no recurrence whatever of the complaint.

This fact may be readily explained by the great irritability of the motor nerves of the glottis, in cases of laryngismus: a predisposition to the disease already exists, perhaps, arising from irritation of the bowels, whilst the constant entrance of an atmosphere loaded with smoke, and other noxious particles, through the sensitive aperture, will naturally still further increase the local excitability, and thus tend to the more frequent aggression of the spasmodic paroxysms.

The disease is often thus maintained, after the

original exciting cause has disappeared, and it is in such instances, most likely, that a removal into pure country air is attended by an immediate cessation of all the symptoms.

This is the "mechanical" explanation of atmospheric influence on the local spasmodic affection: but we must also take into consideration the good effect often produced by "change of air," not only upon those who are labouring under disorders of the respiratory apparatus, but in as marked a manner on individuals suffering from functional derangement of the stomach, or of the nervous system.

Were it necessary to prove "that a liability to serious maladies, both in children and adults, is much greater in town than in country, it is only requisite to consult those invaluable guides on such a point, "The Returns of the Mortality in 117 Districts of England, by the Registrar General." The statistical reports therein contained, prove that "the mortality increases in a ratio with the increased density of population;" and, again, "that the mortality in all ages is comparatively higher in cities than in country districts, and that the source is ascertained to depend *alone* upon insalubrity of the atmosphere arising from the various, but concentrated, emanations from sewers, houses, workshops, dirty streets, smoke, and other products of

combustion, &c. &c.; whereas in the country, these are immediately diluted by the surrounding atmosphere."

By the same "returns" we find that the mortality of infants during the age of teething, is six times greater in town than that met with in an equal population of a country district.

The effect of different localities in country districts themselves, is remarkable, as affecting the health of young infants, even when suckled. Thus it is stated by M. Bouchut,¹ that it is not found advantageous to send infants to the wet-nurses residing in the neighbourhood of Orleans, Berry, or Sologne, as they there generally become pale, febrile, and unhealthy, whilst the mortality amongst them is very great; the infants suckled in Burgundy and Normandy, on the contrary, appear to be thriving and healthy.

It has been thought, by more than one writer on this subject, that "a damp or low locality" is apt to give rise to Laryngismus. Under certain circumstances it may perhaps have some effect, in combination with other causes, but its influence cannot be very powerful. It was stated by Mr. Barlow, in the London Medical Society, that during the previous year, only seven infants suffering from this com-

¹ Manuel Pratique des Maladies des Nouveaux Nés. 1845. .

plaint had been brought for advice to the "infirmary for children." Now this institution is situated close to the Thames, several of the streets in its vicinity are at a lower level than the bed of the river, and the whole of the surrounding neighbourhood is necessarily exposed to the fogs and moisture arising from it; yet, during the same year, a greater number of cases of laryngismus than the above, came under my notice at a much more elevated part of the metropolis (the neighborhood of Russell Square), which is likewise on a dense stratum of gravel. I feel little doubt, however, that some local influence has at all times much to do in assisting to generate this disease; but we are as yet scarcely prepared to explain on what this influence depends. Dr. M. Hall mentioned, during the discussion at the London Medical Society, that he had known of three fatal cases of laryngismus occurring in a family who resided upwards of four miles from a large country town; the other infants of the same family were, on this account, at after times removed from the place, and thus escaped the disease.

I cannot find any decisive proof that *cold weather* has a prejudicial effect on cases of laryngismus; for although an eminent member of our profession has stated, in confirmation of this fact, "that, in three young patients whom he saw in consultation for this

disease during the prevalent N.E. winds of April, 1847, a fatal termination ensued," the deduction is not quite conclusive, since I happened to be consulted for two or three severe cases, during the warm weather which prevailed soon after that time. It will be observed also, in more than one of the cases narrated at the end of this work, that a removal from town to Hampstead Heath, or to the coast, during the cold bleak winds of spring, immediately arrested the complaint. A lady, whose two children I attended successively for laryngismus, assured me that she often purposely sent them out in cold weather, and exposed to the east winds, from finding that they were always relieved by it; that, under other circumstances, she would not have ventured to run such a risk, but that the exposure to the cold invariably stopped the paroxysms, and that not one of these ever occurred at such times.

I do not wish to infer from this case that such exposure to intense cold is prudent in every instance, and it would be highly injudicious, under any circumstances, to expose the child's face to the strong wind, as this proceeding would very likely impede respiration, and thus tend to occasion a spasmodic attack.

Peculiar odours seem, occasionally, to act as a sufficient cause for inducing these paroxysms. Dr. Underwood relates a case which shows that some

cause existing in the air respired, may bring on an attack. An infant of fourteen days old was seized with what was evidently, from the symptoms, "spasm of the glottis," but which was then not recognised as such, it being described as "the infant awaking in a convulsion." The parents kept a liquor shop; and as every remedy prescribed was unsuccessful, the child was removed to the country. After some time, and when quite well, the child was again brought home; but on being taken into the bar-room, it was suddenly seized with "*a kind of spasm in the chest,*" and died in two or three seconds.

A case very similar to the above also occurred, not long since, in the practice of a medical friend, in which the odours of a gin-shop occasioned the attack.

Sir H. Marsh, likewise, mentions a case, which had its origin apparently in the exposure to the atmosphere of a newly-painted room, since the attacks returned whenever the child was brought back into that particular apartment.

In numerous instances, I have had occasion to remark the extraordinary and *immediate* effect produced in arresting the paroxysms, by removing the little patients to a different atmosphere; in others, however, this was not *alone* sufficient; but a total change in diet was required also. In the cases narrated by

other authors, the same fact will be frequently observed; thus in Mr. Hood's child, "country air and a good nurse immediately restored him to health;" and one of Mr. Pretty's cases recovered "on changing the nurse, and sending the child into the country."

It is not unlikely that the atmosphere may produce some external impression on the skin, which influences not only the condition of the nervous system, but also the functions of the chylo-poietic viscera.

After a careful consideration of all the cases of laryngismus which have fallen under my own notice, and of those which are detailed by others, I have long since adopted the following conclusions:—

1. That for the occurrence of this complaint, the cerebro-spinal system is required to be in a peculiarly excitable state, which thus acts as a *predisposing* cause. The period of "teething" is the most likely one to produce this condition.

2. That during this irritable state of the nervous centres, the two most frequent (and in the majority of instances, the combined) causes, are "*the improper description of food*" which is administered to the infant, and "*the impure and irritating atmosphere which it breathes.*"

By the term "IMPROPER DESCRIPTION OF FOOD" may be understood not only an artificial dictary

composed generally of different farinaceous substances, but, in some instances, the *human milk* itself, which, owing to the peculiar constitutional condition of the mother, or wet-nurse, influencing this secretion, is rendered unfit for the nourishment of the infant, by irritating the sensitive mucous membrane which lines the stomach and bowels.

It is not a very unfrequent occurrence that a mother, although affording a tolerable supply of milk for her infant, finds that suckling invariably produces some prejudicial effect upon it, by causing spasmodic pain, constipation, or diarrhœa, &c., and this, too, notwithstanding a most rigid attention on her part to her diet, and all other requisite precautions.

To so great an extent may the bodily or mental condition of the nurse act, through the medium of the milk, upon the infant, that not only is serious illness produced by it in many cases, but sudden death even, may occasionally be the result.

Instances have occurred in which the infant has died owing to the mother having taken a large dose of laudanum; whilst, in another case, the fatal result was dependent on the mother having been accidentally salivated by a small dose of mercury.

A case is mentioned in the Registrar-general's report for April 15, 1848, in which strong nervous

excitement on the part of the mother, whilst suckling her infant, caused its sudden death; “the infant, twelve weeks old, having died suddenly, *from fright to the mother by a mob*, the shock being received by the child at the breast, by the turn or change of milk.”

It will, however, be found that comparatively few cases of laryngismus occur in infants who are fed altogether upon breast milk. Of the numerous instances which have come under my notice at various times, this disease has occurred in two infants only who were not fed by hand, either altogether or partially—one of these was a child, six months old, who had a wet-nurse; by a curious coincidence the nurse herself, two nights previously to the child being affected, had a similar spasmodic affection of the glottis, caused by hysteria, and the sound produced by it so precisely resembled that which the father of the infant (a medical practitioner) had been accustomed to hear whilst his elder children had suffered from laryngismus, that he hastened up stairs, thinking the infant was also attacked by it. Two days after this, the child, for the first time, did show symptoms of the disease, although they were slight, and of short duration, compared with those of the other children.

In connexion with this part of the subject, it will

be necessary to recollect, that in some cases where a wet-nurse has been supposed to fulfil her duties satisfactorily, it has proved that other food was given, unknown to the parents; to such an extent has this deception been practised in some rare cases, that on suspicion being at length excited, a careful examination has detected the fact, that, for weeks previously, owing to its total suppression, no breast-milk whatever had been supplied to the child.

Under some circumstances, then, laryngismus may be caused by a vitiated state of the nurse's milk rendering it "improper food."

Still more strongly, however, do I intend to refer to the plan of giving to the young infant a description of food totally different in consistence and quality to that intended by nature, or, in other words, the system of "*rearing by hand*," as it is termed. I am quite aware it may at once be answered, that numerous healthy-looking children *have been* thus reared; but I think I shall be able to prove that, in reference to the number who have died in the attempt, they are not numerous, but merely exceptions. I cannot, however, go so far as the late Professor Hamilton, of Edinburgh, who was accustomed to declare, in his lectures, that he had not known of a child who was reared exclusively by hand, ever reaching adult age, although he understood that they were

rather more fortunate on the southern side of the Tweed.

The important question is not, however, if children, who are artificially fed, can survive this process in a certain ratio; but whether the number of deaths which take place during such attempt, is not incomparably greater than that which occurs in infants who receive their natural nourishment; the fair method of treating this question is, to examine the statistics of large public institutions, available for the purpose, by which we may ascertain the results of the two different systems.

It is well known that a large mortality occurs amongst infants under two years of age, at all times and places, and the *Carlisle* tables of mortality (the correctness of which has been proved by the later evidence of those of the *Equitable Office*) show that of 10,000 infants, about 1539 die in their first year, and, of the remaining 8461, 682 die in the second year. An inspection of the Tables will afford evidence also, that a large proportion of these infants die from diseases connected with the alimentary canal, such as diarrhœa, atrophy, tabes mesenterica, and from convulsive affections.

This ratio of mortality, however, is not the same in all localities, and, according to the reports with which I have been favoured, on application at the

Registrar General's office, I find that the mortality of infants in London, in all England and Wales, and in two counties of the south-eastern division which are remarkable for their healthiness, stands, in round numbers, as follows—

ANNUAL MORTALITY PER CENT.

	LONDON.		ENGLAND.		SOUTH EASTERN COUNTIES.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 1 Year,	23	17	20	15	16	12
In 2nd Year...	10	9	6	6	4	4

We find, then, that a large number of infants perish in early life, that convulsive diseases and those of the stomach and bowels are the most frequent causes of this mortality, and that such mortality is in a much higher ratio in towns than in the country. My purpose, however, at present, is solely to inquire “*in what proportion this mortality is filled up by infants who are ‘suckled’ and by those ‘fed by hand.’*”

It appears that in the middle of the last century, this subject had occupied the attention of Sir Hans Sloane, who took great interest in the Foundling Hospital of London, then recently established. At this time it was the practice to feed the infants

chiefly *by hand*, and the great mortality which was the result of this practice called forth a letter from Sir Hans, in October 1748, addressed to the vice-president of the institution. He alludes to "the diseases occasioned by bad nourishment, and the want of the breast by wett-nurses, so that the children scarce ever live to two years old, as may be seen in St. Giles' Parish, there being no wett-nurses provided, but being bred up by hand, that out of foundling or other children sent thither, scarce one in seven lived. At the Temple and at Chelsea, there dyes above one half of the foundling children."

"My opinion," he adds, "I told you, was founded on the experience that I had for fifty years, that as far as my memory served me, I observed that in three infants bred without breasts, two generally dyed, or in that proportion, notwithstanding what I or others could do to help them. This I generally thought proceeded from deviating from the orders of God and nature, to follow men's inventions. I think the difference of the age of a wett-nurse's milk is not to be so much regarded, having in my own family had one wett-nurse suckle four children successively, who have been, and now are, healthy and well."

Sir Hans Sloane concludes his letter with the following statement of facts, as to the difference of mortality in children "wet-nursed," and "fed by hand,"

which was noticed among some of the earliest admissions into the hospital.

Total—children admitted . . . 90

Total to Wet-nurses . . . 26; of which dyed . . . 5

Do. to Dry-nurses . . . 63; „ dyed . . 34

Taken out, 1.

The mortality in this institution, however, is stated by the present assistant-secretary, Mr. Brownlow,¹ to have been *seventy per cent.*

From the bad results attendant on the former plan of rearing the Foundling infants, it has been the custom, for some years past, regardless of the expense, to forward them, as soon as possible, to wet-nurses residing in a healthy part of the country; certainly a most judicious and humane proceeding, and one which reflects the highest honour on the governors of the Foundling Hospital.

It must be borne in mind that many of the children enter under very unfavourable circumstances, and it is stated in the report of the medical officer, that “at least one-fifth of those admitted during the last nine years, have been in such a miserable state of emaciation, from being exposed to all the injurious consequences arising from insufficient nursing and improper diet, as to make it doubtful if they could be

¹ Memoranda of the Foundling Hospital. 1847.

reared at all, and I have generally found, on inquiry, that those who have had the advantage of a wet nurse, have been fed, at the same time, with spoon food."

Notwithstanding these disadvantages, such is the benefit derived from the present plan of *providing a separate wet-nurse for each infant in healthy country air*, that out of 200 infants received within the last four years, only 21 died in their first year, and 15 in their second. The mortality under 5 years is only $20\frac{1}{2}$ per cent, whilst in private families in the metropolis for the same period, it is between 30 and 40 per cent.

Let us now compare the mortality of the above institution with that of others, in which feeding by hand is still continued.

From one of the largest parochial establishments in the metropolis, the young infants are sent to a very salubrious part of the country, a few miles distant, where they are carefully attended to by a humane and judicious matron, but reared *by hand*. Now, here one element of what is requisite is attained—viz., "*pure air*," but for want of the other still more essential constituent, "*breast milk*," the mortality is still found to be very considerable. I have procured accurate returns of the mortality of the infants in this establishment during the last ten years, and find

that out of 60 children admitted under the age of one year, 38 died speedily, and of the remaining 22, fourteen had nearly attained the age of one year when they entered. Out of the survivors, only 4 had been admitted in *early* infancy.

This statement affords a proof that removal to the country *alone* is not sufficient to answer the intended purpose, but that some provision must be made, at the same time, to nourish the infants with their natural food.

Jonas Hanway, in a report upon this subject drawn up by him in the last century, alluded to the London workhouses, and mentioned instances of "every child received under a twelvemonth old, dying within the year." I am sorry to add that from some inquiries which I have made on this subject, I have reason to believe that the same statement might be made with justice at the present time.

It was through the interference of the above philanthropic individual, that, in 1761, the metropolitan parishes were obliged, by Act of Parliament, (7th of George III.) to send out their infant poor to country establishments, provided for that purpose, at not less than six miles distance from London, there to be kept until the children were six years old. Previously to this plan being commenced, out of

an average number of 2800 infants admitted annually into the workhouses of London, 2690 died. "Whereas, since this measure was adopted, only 450 out of the whole number die; and the greatest part of those deaths happen during the three weeks that the children are kept in the workhouses."¹

Unfortunately this Act, although one step in the right direction, was repealed by the 7th and 8th of Victoria, whereby the obligation now no longer exists.

Liancourt, in his report to the National Assembly of France, stated that of the children *then* admitted into the Foundling Hospital of Paris (Hospice des Enfants Trouvés) *two-thirds* died during the first month, and of these, *three-fifths* before they were given to a wet-nurse. This nursing, however, consisted in one woman having to suckle five or six infants, and of course, at the same time, feeding them principally by hand.²

There were received into the above-mentioned hospital from the years 1771 to 1777, 31,951 infants, and of these 25,476 died before the termination of the first year. "At the present time, from 5 to 6000 infants enter annually, but of those received into the

¹ Examination of Dr. Price's Essay on Population, by the Rev. John Howlett.

² Edinburgh Medical and Surgical Journal, vol. i.

infirmary, three-fourths die, notwithstanding the employment of good ventilation, great cleanliness, and other measures—the principal cause of the mortality being ‘*privation of breast milk.*’”¹

It appears also, that the directors of other continental foundling hospitals, owing to the great mortality which annually took place in them, have at length adopted the plan of sending a certain proportion of the infants to be suckled in the country, and by this proceeding the number of deaths has been materially diminished.

The reports of the Dublin Foundling Hospital present as frightful an amount of mortality as can be well conceived.

In the year 1790, 2180 infants were admitted into that establishment, and in the succeeding year only 187 of this number were found to be alive. In another report, drawn up by Sir John Blaquiere, in 1797, it is stated that, during the preceding six years, 12,786 infants were admitted, out of whom 12,651 died, 135 only surviving. Of 5216 children sent into the Infirmary in those six years, not more than three came out alive.

By a communication which I have received from the Rev. J. Aikin, Secretary of the above hospital,

¹ Lee: “Medical Institutions of the Continent.”

in answer to some inquiries on the subject, I learn, that for several years past, no children have been admitted into that institution, and that the cases at present under the care of nurses in the country are *adult* invalids. From the same cause, the Foundling Hospital at Vienna now serves only as a depôt for infants, until they can be sent to nurses in the country.

In the Dublin Lying-in Hospital, where the infants are *suckled*, the mortality, during the first fifteen days, is only one in fifty-eight and a half; in the Hospice des Enfants Trouvés, at Paris, where the children are fed by hand for the first nine days, the mortality during that period is one in four.—*British and Foreign Medical Review*, (April, 1839.)

It clearly appears, then, with what ill success the attempt to rear children by hand in public institutions is followed; and if further inquiries are made in other directions, on the subject, the same unsatisfactory result will be discovered. Thus Dr. John Clarke, from his investigations, gives the average proportion of infants who live beyond their first year, *when fed by hand*, as one in ten.

Dr. Merriman, after careful inquiry, says, that one in eight survive; according to Dr. Marshall Hall, the average mortality of infants, *dry-nursed*, is seven in ten in London, but rather less in the country; whilst

Dr. H. Ley gives as the result of his own observations, that four-fifths of infants who are fed by hand, die.

If we inquire into the ultimate fate of those beautiful, well-developed, healthy infants, brought for our inspection when the mothers are seeking for the situation of wet-nurse, we shall find, most frequently, that, a few months after, these children, transferred to a dry nurse, are either dead, or have dwindled down into emaciated, unhealthy beings, ready to fall a sacrifice to the first acute disease which may happen to attack them.

Dr. J. Clarke states, that in one family alone, he knew of a succession of six wet-nurses, whose children had all died whilst being fed by hand; and, in another family, eight, who had lost their infants under similar circumstances. So great is this evil, that the late Dr. Denman, and some others, endeavoured to establish an institution for the reception of the infants of wet-nurses, but the benevolent attempt failed. Improper food, with close, ill-ventilated, small apartments, will readily explain the great mortality.

Scarcely a week passes *now* without the Registrar General's Report containing several fatal cases in infants, resulting from such causes as the following:—"convulsions produced by want of mother's milk;"

“atrophy from want of breast-milk, aged ten months;” “marasmus, diarrhœa, and convulsions, from dry-nursing, aged eight months;” “exhaustion from deficient supply of breast-milk, aged four months;” “atrophy and want of the mother’s milk, one year old;” “dry nursing, six months;” “atrophy from insufficient and improper food, seventeen months old, ill fourteen days after weaning.” In one week’s report, for August 5, 1848, there are fourteen cases of the above description returned. In several of these cases, the cause of death was determined at a coroner’s inquest, so that the deaths probably were sudden, and were not unlikely owing, in some instances, to laryngismus. As yet, however, the mention of this complaint in the reports is very rare, but when the attention of medical practitioners is more forcibly drawn to its consideration, the returns will most likely become more accurate. In one large parochial institution, all deaths, which in reality are caused by want of the natural nourishment, have, to my knowledge, been returned for many years past, under the head of “*Convulsions*;” and I believe that the same plan is followed in other establishments of a similar description, without the peculiar form of convulsion being specified.

At a meeting of the Westminster Medical Society, it was mentioned by Mr. Hancock, who had been

appointed to make an inquiry into the deaths of some infants in the Marylebone Infirmary, that "an order had been most injudiciously given by a non-medical authority, to wean all the infants, then in the nursery, nine in number, and that in three weeks after this, *eight of the nine were dead.*"

Numerous authorities may be cited to prove that rearing by hand, amongst other bad effects, is a frequent cause of laryngismus. The Reviewer of Dr. J. Clarke's work in the "Edinburgh Medical and Surgical Journal," 1816, admits that it "does not often occur in children who have lived by sucking till they have teeth, and have never taken animal food till the dentes cuspidati have come through;" Dr. Clarke, himself, having mentioned overfeeding as a frequent cause.

Dr. H. Davies, in one of the cases related by him, remarks, "over-feeding the child each day with thick panada, evidently had a material influence in producing the complaint."

Dr. Hugh Ley's observation on this point is also very forcible. "The chances of preserving children who have a family proneness to this complaint will be exceeding slight, if it be attempted to *bring them up by hand,*" (p. 198.)

A case strongly corroborative of the effect which

irritation of the bowels has in producing laryngismus, was related to me by Dr. Theophilus Thomson. In this instance, ascarides proved the exciting cause of the paroxysms, since the latter subsided immediately after the worms were removed.

In another case under Dr. Thomson's care, the complaint was produced by the habit of loading the stomach with basins of farinaceous food; disturbed sleep, great sensitiveness to noise, irritable temper, and intermittent pulse, were mentioned among the symptoms. Recovery took place under the use of purgatives and mercurials.

In the family previously alluded to, in which so large a number of children were attacked in succession by laryngismus (four of them dying from its effects) all were chiefly "fed by hand" in London. The last infant was kept at the breast for two months only; on weaning it, slight symptoms of the complaint were observed, and the child was immediately sent to the country; after remaining for some time free from any attack, it was brought back to town, but a paroxysm came on immediately, and the child was again sent to its former abode.

Finally, if the cases related by different authors are perused, we shall frequently find that, whatever the supposed cause for the disease may be, in their opinions, reference to this point will be made. Thus,

in Dr. Hirsch's cases: "No. 1, C. N. was weaned at nine months, and *soon after* was attacked," &c., "No. 2, R. M. at the age of ten months, *after having been weaned*, began to be affected," although this author attributes the disease to an enlargement of the thymus gland.

Many nurses who have the charge of young infants, "brought up by hand," have an invincible objection to "thin food:" their object is to make the child appear as hearty and fat as possible, and the medical attendant has frequently, even in cases of imminent danger, to struggle against this erroneous prejudice. Other nurses, again, are of opinion that strength depends on the *quantity* of food which can be thrown into the stomach and bowels of the infant, and the plaintive cries resulting from over-repletion and the effects of indigestion, are looked on as an appeal for an extra supply of nourishment.

I visited, not long since, in consultation with a surgeon residing in Pimlico, an infant five months old, which had been attacked occasionally by spasmodic closure of the glottis; we found that although it was *nominally* suckled by the mother, the pap-boat was constantly resorted to; the child, we were told also, was never satisfied, as it cried continually. By the use of purgatives, and confining the diet to simple milk and water, the infant in the course of four days

had considerably improved; and the mother, at our recommendation, promised to procure the services of a wet-nurse. About a week afterwards, I was again summoned to the child during the night, but found on my arrival, that it had suddenly expired during a paroxysm of laryngismus, and that the same system of over-feeding had been recommenced, in spite of our remonstrances.

The following practical remark of Dr. Leonard Stewart, in relation to the diet of children, is worthy of recollection :

“ The desired end of this ill-judged plan of nourishment,—that, namely, ‘ of fattening, or strengthening’—is *at first* very frequently attained; but even this is a dangerous advantage, for the intestines become clogged in consequence of the undue remora of the alimentary mass, the foundation is often laid for habitual constipation, plethora, *nervous irritability*, and probably a tendency to suffer from any accidental cause of disease.”—*On the Tendency to Disease in Refined Life*.

It is a common remark of parents, “ that the appearance of teeth surely denotes that they ought to be used,” and, in accordance with this theory, meat and other tough foods, which require much mastication, are given, and this, too, when there are perhaps only three or four incisory teeth visible: the fact being

forgotten that at an advanced age, when the same means of masticating only exist, owing to the loss of all the other teeth, digestion is often very much impaired, from the stomach being required to fulfil, not only its own usual duties, but that also which ought to have been performed by the molar teeth, or grinders. These are absolutely necessary for such a description of food, which ought not therefore to be administered until they are ready to perform their appropriate office. It is astonishing how exceedingly injudicious parents are in some cases, in relation to the dietary of young infants: for example, a child of a few months old, I found, although still at the breast, was allowed frequently to eat meat, potatoes, cabbage, and, above all, was *very fond of cheese!* In a case related by Dr. Montgomery, the mother was in the habit of giving her infant, *wine, punch, and bottled stout*, "*because it cried for them!*"

Owing to the over-stimulating kind of food administered, the gastric fluid and hepatic secretions are vitiated, morbid sensibility becomes gradually more intense, and, from reflex action, is speedily followed by increased irritability of the spinal nerves communicating with those supplying the respiratory apparatus.

There is an "organic sensibility" of the stomach

and bowels, which, in some infants, as well as in adults, is most acute, and to this the late Dr. James Johnson¹ particularly alludes; so great is it that the small worm, "the Ascaris," will alone produce, by its irritation on the nerves of the intestines, an epileptic fit, or general convulsions.

A somewhat analogous affection of the respiratory apparatus, "hiccough," is, according to Sir Charles Bell, also excited by "irritation of the stomach."—*Philosophical Transactions*, 1821.

Dr. M. Hall has most clearly pointed out the method by which this "reflex action" is excited, and conveyed to distant parts of the body.²

DIAGNOSIS.

There is a peculiarity in the symptoms of this disease which readily distinguishes it from the other complaints formerly confounded with it; and those who have had the opportunities of witnessing such symptoms in one case, will feel little difficulty in detecting their true nature in others. The young practitioner, however, who is totally unacquainted with this infantile disease, may possibly fall into the error of mistaking it at first for croup, hydrocephalus, or hooping-cough. It will be essential, therefore, to point out, as succinctly as possible, the diagnostic

¹ Essay on Indigestion.

² On Nervous Disorders.

characters of each of these complaints, more especially of the first, as laryngismus has been described occasionally, even by recent authors, under the title of "Spasmodic Croup."

LARYNGISMUS. — The precursory symptoms are rare, and consist only of slight catchings of the breath and wheezing; but there is no previous catarrh, as we find in croup. The complaint occurs, in the majority of cases, before the child has attained its eighteenth month, and most frequently between the sixth and fourteenth months. Infants of a nervous and irritable temperament, are the most subject to the disease, and there are no inflammatory or febrile symptoms present. The attacks come on either during the day or night indiscriminately, but are most common in the morning. Respiration is perfect during the intervals. Cough is not generally an accompaniment of laryngismus, but may be so accidentally; in this case, it is the common cough of childhood. Mental emotions may bring on the paroxysm.

The crowing inspiration of laryngismus is not hoarse, rough, or grating, in its character. The paroxysms are of a convulsive character, and are frequently accompanied by a spasmodic closure of the fingers and toes. There is no dyspnœa between the attacks, but in the paroxysms only. Laryn-

gismus is not more than usually prevalent during damp weather; it is far more so in towns than in rural districts, and is purely "a spasmodic disease."

CROUP.—This formidable complaint is essentially of an inflammatory character, but induces a spasmodic action of the muscles of the glottis likewise, during the paroxysm.

There are generally marked premonitory symptoms, although their invasion is sometimes very insidious: the full development of the complaint is, in most cases, preceded by catarrh, drowsiness, febrile action, difficulty in breathing, and a hoarse cough; the voice is deeper in tone at first, but, after an attack, is sometimes almost lost, or has a squeaking character. There is a stridulous inspiration, similar to that which is observed in the adult during an attack of laryngitis, and some modern authors have, therefore, described a form of croup under the separate name of "Stridulous Laryngitis," but there is really no essential difference between them.

The whooping noise of laryngismus is not attendant upon cough, but in croup it is so, and is of a totally different character, being much more rough and hoarse. It is not easy, accurately to define the difference, but those who have once heard the sounds will have no difficulty in distinguishing them afterwards.

Croup seldom attacks an infant before it has attained its second year. The suffocative paroxysms of croup come on almost invariably during the night. There is no spasmodic contraction of the extremities observed during such attack.

Croup is dependent upon a diphtheritic exudation on the internal surface of the larynx and trachea, which obstructs respiration, mechanically, and by the consequent spasmodic action which it induces. This disease is commonly observed at places situated near the sea, or in low, damp situations, and is comparatively rare in towns. It is said to be occasionally epidemic, as well as endemic.

Between the attacks of croup the dyspnœa and cough continue, and, in many cases, become gradually more severe; the febrile action is also increased. In severe cases, croup generally terminates fatally within two or three days by suffocation.

The pathognomonic symptoms of the disease are essentially, "the peculiarity of the cough, of respiration, and of voice."

HYDROCEPHALUS.—Our diagnosis as to this complaint will be surrounded, in some cases, by great difficulty, owing to the obscurity of the symptoms. It is acknowledged by all the authors who have treated on hydrocephalus, that there are numerous instances of it, in which the effusion cannot be

detected. Dr. Rush, several years since, related cases in which not a single symptom of effusion was present—yet, after death, large quantities of fluid were found in the ventricles of the brain; and, at the present time, we have no certain signs as to its presence by which we can be guided. The symptoms detailed as those of hydrocephalus, have frequently been found to exist when this disease was not present, whilst it has in other instances progressed to a considerable extent, without such symptoms having been noticed.

The presence, therefore, of effusion of water in the brain, in numerous cases, can only be discriminated by symptoms which are often extremely fallacious. Instances have already been pointed out in which Dr. Cheyne, and other writers, were probably deceived as to the true character of the complaint; and Dr. Hugh Ley refers to three cases of laryngismus, which he saw in consultation, and which had been erroneously pronounced to be hydrocephalus; in one of these, which terminated fatally, *no trace of vascular congestion, or water*, could be found, on examining the brain.

I had, not long since, the opportunity of seeing a similar case, in which the presence of a considerable quantity of water had been confidently stated to exist, and yet by the use of purgatives and anti-

spasmodics, within a few days all the symptoms disappeared.

It is, however, of the utmost importance that we should be able to draw some distinctive line between the symptoms of laryngismus and those of hydrocephalus, as the prognosis must be materially influenced by such a decision.

The following diagnostic symptoms will perhaps serve, in the majority of cases, to mark the characteristics of hydrocephalus, as contra-distinguished from those of laryngismus.

Children are seldom attacked by hydrocephalus whilst healthy and robust; there is almost always a previous emaciation, and a succession of febrile attacks, the general health gradually becoming deteriorated, accompanied by great languor, loss of appetite, and dry cough. We then observe nausea, vomiting, heat of head, intolerance of light, a frowning aspect, contraction of the pupils, severe and sudden pains in the head, as evidenced by a shrill scream, rolling of the head, drowsiness without sleep, and pyrexia. Gradually, an increased drowsiness comes on, with irritable manner, moaning, sluggishness of the pupils and strabismus, the piercing acute cry is often repeated, and exacerbation of all the symptoms takes place towards night.

According to Cheyne, the most striking symptom of the second stage, is the affection of the eyes, "the squinting and double vision."

The same constipated state of the bowels, and deranged alvine secretions, are observed in this complaint, as in laryngismus, but the abdomen in general presents a more sunken appearance than in the latter complaint. The crowing noise of inspiration is so rarely heard in hydrocephalus, that it may be looked on, I think, as peculiarly indicative of laryngismus.

Acute hydrocephalus is more likely to occur after the first year of childhood, than during it.

In chronic hydrocephalus, the emaciation, drowsiness, restless motions of the head, tension of the anterior fontanelle, squinting and rolling of the eyes, together with the gradual enlargement of the head, will generally enable us to distinguish it. When at all advanced, the physical signs are too apparent to allow us to doubt its existence.

We must, however, recollect that the relative proportion as to the size of the child's head varies considerably, being much larger in some infants than in others: this may be owing to some family peculiarity of conformation, and the proper relative proportions between the head and the body become adjusted, as it were, during the progress of childhood.

HOOPING COUGH.—The diagnosis from this complaint is by no means difficult, although the erowing inspiration is much more similar to it than to that of croup, but still is not so sonorous. In laryngismus, there is the absence of the convulsive cough—there is no retching, vomiting, or free expectoration at the termination of the paroxysm. Pertussis is more gradual in its approach, and the coughing fits come on frequently during the day: in the majority of cases it is preceded also by catarrhal symptoms, and a febrile attack.

I have known laryngismus more than once mistaken for inflammation of the lungs, and in one case, a large blister had been applied to the infant's chest. In another case of an infant four months old, the suffocative paroxysms were attributed to an "elongation of the uvula."

PROGNOSIS.

The prognosis in this disease must in every case be somewhat uncertain, for it has been seen that the complaint occasionally proceeds in a mild manner for a time, and then suddenly assumes the most dangerous form; in more than one instance, I have known an infant to be thus quickly carried off by the spasmodic closure of the windpipe, when little or no danger was anticipated.

During the whole period of dentition there is a liability to a recurrence of this complaint, and continued care, therefore, should especially be paid, when any of the teeth are coming through the gums.

It has already been shown that there are no regular intervals between the attacks, and that a sudden and very severe paroxysm may unexpectedly occur at any moment. The only instance to the contrary which has come within my knowledge, is that of Case 6, the paroxysm appearing regularly on a certain day in each week, without any obvious exciting cause, and thus giving an intermittent character to the complaint.

The principal dangers to be apprehended are "suffocation" and "cerebral convulsions." Thus the prognosis will be worse when the child is constantly dull and heavy, with sluggish pupil, and signs of venous congestion about the head; for if the paroxysms of laryngismus are frequent and violent, they may materially aid in producing effusion into the cavities of the brain: should there be any family tendency to cerebral disease, the prognosis assumes a still worse aspect. If there be reason to think that the mesenteric glands are in an unhealthy state, it would materially influence our judgment in pronouncing a more unfavourable opinion of the case; the local irritation caused by an

attack of bronchitis would also place the little patient in a more dangerous position, though this is not an absolute rule, as, in one of the cases which I have narrated, the crowing noise disappeared during an inflammatory attack of this description, and returned after it was subdued.

In all cases, the medical attendant should point out to the friends the liability as to sudden danger even in apparently mild forms of the disease; it will not only be a prudent step to take in thus warning them of the variable shape the complaint may assume, but by placing them on their guard, it will also ensure a far greater attention to the proper and judicious dietary of the child, and will therefore aid, at least, in warding off the danger apprehended.

The *duration* of the complaint is variable; the little patient may be carried off by the first attack, although this is a rare occurrence; in other instances, as in one related by Rullman, the child may struggle through the disease for twenty months, and then fall a victim to its effects.

The *mortality* in this complaint varies considerably in the statements of those authors who have described it. We cannot, at present, refer to the Reports of the Registrar-General, for an accurate statement as to this point, owing to the disease

being included, in the great majority of instances, under the head of "Convulsions" or "Dentition."

Dr. Gooch states, that the disease proves fatal in *one-third* of those attacked, but this is a far greater proportion than has occurred within my own observation, for out of a number amounting to fifty, which have come under my notice, six only were lost. These were *all male* infants, and *fed by hand*: the earliest period of life at which the fatal termination occurred, was three months and a half, the latest, seventeen months.

One of these cases was complicated with whooping-cough and bronchitis.

In Sir H. Marsh's cases, five recovered, and two proved fatal.

In Dr. Hirsch's cases, three out of five died; one, however, was complicated with whooping-cough, and the two others with general convulsions.

Dr. Hugh Ley observes, that the disease "is not very commonly fatal," whilst Dr. H. Davies thinks that it is *frequently* a fatal disease, especially when complicated with convulsions, and adds, "a child so affected, is never safe till three years old, or has cut all its teeth."

My experience quite corroborates that of Dr. H. Davies as to the danger being much greater during the period of dentition; in fact, I have never yet seen

a fatal termination of the complaint, after the appearance of all the deciduous teeth, and only three cases (two of which occurred in the same family) where the disease appeared at all after this period.

Dr. M. Hall mentioned that he had once met with three fatal cases occurring within three days.

It is a question, "how long can respiration be suspended, in cases of laryngismus, without a fatal result?" Dr. Hugh Ley says, from two to three minutes at the utmost; but, I conceive, it is very rarely that the patient will recover when the entrance of air has been impeded for so long a time as this. The most experienced divers, I believe, can only remain under water for three minutes, with safety. In laryngismus we have the violent spasmodic disease itself, with its originating causes, and all the consequent effect upon the brain, combined with want of air in the lungs. In many of the prolonged spasmodic paroxysms, however, I have observed that air does occasionally and repeatedly enter the lungs, although only for one or two seconds.

The disease is more likely to prove fatal in male children than in females, if I may judge by those cases which have occurred within my own observation.

Laryngismus, according to the statements of some authors, however, more frequently attacks boys than

girls: thus *Pagenstecher*¹ mentions that of eighteen cases which he saw, fourteen were males, and only four, females; whilst *Hachmann*, in sixteen children, had twelve males and four females as patients. The former practitioner was peculiarly unfortunate, in losing eleven of his cases during the paroxysms, and two by consecutive complaints, whilst the latter lost two only from laryngismus itself.

It is astonishing, however, in some cases, how many attacks of the spasms and convulsions combined, may take place during the twenty-four hours, without proving fatal. I have known them to occur on every slight noise in the room, so that the mere gentle displacement of any article on the table would cause a paroxysm, and yet a favourable termination of the disease ensued.

It has been thought that laryngismus is now much more frequently met with than formerly: but this depends most likely on its true nature being more generally recognised, since the attention of the profession has been directed towards its peculiar symptoms.

POST-MORTEM APPEARANCES. — I have already more than once alluded to these, but they will aid us very little, I fear, in detecting even the proximate causes of the complaint. If spasm of the glottis be essentially dependent upon a morbid nervous action,

¹ Heidelberg Klinische Annalen, 7—2.

which is merely symptomatic of a functional derangement of distant organs, we must be prepared to find that, in numerous cases, there is an almost total absence of morbid change, either in the organ directly implicated, or in other parts of the body more remotely concerned. Functional derangement, especially of the nervous system, though sufficient to cause death often in a most rapid manner, leaves no traces which are appreciable to the eye of the anatomist: thus in idiopathic epilepsy, or in tetanus, pathologists are often unable to detect any changes of structure whatever, in the cranium, or in the organs of the thorax and abdomen: chorea, too, may exist without lesion of any organ. So, likewise, in fatal cases of laryngismus, and in those of puerperal convulsions, I have carefully sought on several occasions for morbid appearances, but have been unable to discover any, even in the spinal chord; and the result has been the same also with many other inquirers. Pathological researches must often labour under this disadvantage: some important changes may have occurred, during life, the signs of which are afterwards inappreciable to the visual organs, in a similar manner as a piece of metal may be hot or cold, without the spectator being able to distinguish the difference by merely looking at it, however excellent his sight, or carefully his observations are made. As a

general rule, it may be stated, that no unusual appearances are found to exist in the glottis itself, or in the adjacent parts; no trace of inflammatory action, œdema, or persistent constriction.

In the cases which I have had the opportunity of examining, after death, no enlargement of the neighbouring glands was discovered, sufficient to account for a fatal termination by pressure. In one of Mr. Powell's cases, however, the thyroid gland was preternaturally enlarged, the left lobe not only pressing the carotid artery out of its proper direction, but resting also on the recurrent nerves; the cervical glands were large, but the glottis presented no unusual appearance.

In the cerebral organs, no greater amount of pathological change is observed than might be reasonably expected to accompany any case of sudden death, and, as already observed, it will sometimes happen that none whatever can be detected. As in asphyxia, from other causes, different effects are produced on the brain and heart in individual cases, so will they be observed also in laryngismus.

Sir H. Marsh found effusion into the ventricles of the brain, in one case only, without any further morbid change in that organ, whilst all the other parts of the body showed no alteration of structure whatever. In regard to the heart, likewise, we find,

that in one case it is flaccid and completely emptied, whilst, in another instance, one half of that organ is full of blood.

We cannot then depend on the presence or absence of certain pathological appearances, as surely denoting the pre-occurrence of laryngismus, any more than we can do so in some cases of epilepsy, tetanus, hydrophobia, puerperal convulsions, or other diseases in which the nerves play so important a part. The evidence as to the morbid appearances, in any one of these complaints, varies materially according to the reports of different practitioners. Thus, in numerous examinations of epileptic patients, made by Dr. Prout in 1804, he states that he *always found worms in the Intestines*, (*Medicine Eclairée, &c.*); hence, of course, he would naturally conclude that *they* were the exciting cause of this complaint. Dr. Wengel, on the contrary, has *always* found the *cerebellum diseased*, in fatal cases of epilepsy, (*Observations sur le Cervelet, &c.*)

The pathological condition most frequently observed in laryngismus, is that which we should expect to find in asphyxia produced by hanging, drowning, or by the inspiration of mephitic air, and it probably depends upon a similar cause,—viz. the impossibility of fresh atmospheric air entering the lungs.

Scarcely sufficient attention has hitherto been paid, I think, to the state of the mucous membrane of the intestines in fatal cases of laryngismus; and I should feel disposed in any future instance of it to examine minutely this part. If Cheyne found reason to attribute the origin of hydrocephalus to inflammatory action of this membrane, and its results, it is much more likely that spasmodic affection of the glottis should result from the same cause: in confirmation of this opinion, I may mention that Mr. Ridout, of Montague-street, has informed me that in one fatal case of laryngismus which he carefully examined, the only morbid appearances detected were "ulcerated patches in the small intestine, near the ileo-cæcal valve."

From all the evidence adduced by different authors, either as to the occasional presence of some one or more pathological changes which have been observed in children dying from the effects of laryngismus, or as to the total absence of such morbid conditions, it may, I think, be fairly inferred that spasm of the glottis, in the great majority of cases, is dependent solely on "functional disorder." The frequent transitory character of the symptoms would denote also, that the number of cases which originate from any organic change of structure, must be very small.

TREATMENT.

A precise knowledge of the most frequent causes of any complaint, will be found of course only so far serviceable, as it may indicate to us the proper mode of treatment.

I have endeavoured to prove that the most common origin of laryngismus, exists in *irritability of the bowels*, as a consequence of indigestion.

That this state is most likely to occur during the period of *dentition*.

That the spasmodic effects are more frequently observed, and are much more severe and durable, whilst the infant is respiring an *impure atmosphere*.

That the same causes which induce this disease, are precisely those which, above all others, will favour an attack of cerebral convulsions.

That laryngismus is essentially a *spasmodic* complaint, and will require, therefore, in its treatment, remedies which are generally employed for this class of disorders.

As we are sometimes called on to visit infants, who are attacked by laryngismus, during one of the suf-

focative paroxysms, it will be as well first to consider the remedial measures which prove most available during such attack, before proceeding to the general treatment, the object of which is more especially to remove the exciting causes.

TREATMENT DURING THE PAROXYSM.—Practitioners who are accustomed to the management of those newly-born infants, in which the only signs of vitality recognised are, the pulsations of the umbilical chord and heart, and where all the means employed are directed to the establishment of the power of respiration, cannot do better than follow exactly the same mode of treatment in cases of spasmodic closure of the glottis. Hot water applied to the lower parts of the body, cold affusion to the head, and sprinkling cold water forcibly in the face, will, in turn, be found highly advantageous in reproducing the respiratory function. Slapping the chest and nates is a most valuable aid also in the physiological action upon the respiratory nerves.

Blowing in the face, at intervals, is well known to excite strongly the same action, and I have met with a most marked instance of its good effect within the last few days, the infant lying apparently lifeless, except when on each successive shock to the facial nerves, a convulsive sob was the result, respiration at length becoming fully re-established. In many

cases of laryngismus I have witnessed very speedy good results follow the exposure of the child to the current of air at an open window, and this holds good also in the treatment of general convulsions. Dr. Mason Good gives the following testimony as to the latter point. "Where the warm bath has been tried repeatedly in vain, I have frequently succeeded by taking the little infant in my arms, and exposing him, nearly naked, for a few moments to the air of the window, thrown open, to allow it to blow upon him. The great diminution of sensibility which prevails at such a time, prevents all danger of catching cold, while, on the contrary, the little patient is usually revived by the sudden rush of the external air, and the fit, in many cases, ceases instantly." (*Study of Medicine*, vol. iv.)

Where asphyxia continues for a lengthened period, *artificial respiration* may be tried in the usual manner; blowing at intervals into the child's mouth, closing at the same time the nostrils, pressing the trachea against the œsophagus, and afterwards compressing the thorax and abdomen with the hands—thus alternating the imitation of inspiration and expiration.

As our principal object, during these paroxysms, is to overcome the spasmodic rigidity of the muscles acting on the glottis, the inhalation of the vapour of

æther may be had recourse to, provided any degree of respiration is still carried on: the vapour of ammonia may be also applied to the nostrils. Stimulating enemata have been tried in some cases with advantage on such occasions, and the spine should be rubbed with spirit, or any other stimulant which may be at hand. It has been a question whether in severe cases of laryngismus the operation of *tracheotomy* should not be performed: it is one which will admit of argument, for we know that in some apparently hopeless instances the infant recovers, after a considerable time, under the usual means, and it is therefore incumbent on us not to resort too hurriedly to the employment of such a severe remedy; on the other hand, the operation, to be of service, must not be too long delayed. There is, therefore, a choice of difficulties; but, as an argument against the operation, it will be prudent to recollect that in the cases narrated by Dr. Budd, and others, before alluded to, where death occurred in adults under somewhat similar circumstances, this opening of the trachea was speedily resorted to by the medical officers who were on the spot, but without any good effect. In these cases, too, the spasmodic closure of the windpipe was owing to local causes alone, whilst in infantile laryngismus it is complicated with serious disturbance of other distant organs.

The important consideration, however, in the treatment of infantile laryngismus is not so much directed to the paroxysm itself, which is merely an effect, as to the morbid irritability which exists, not only locally, but more especially in the nervous centres, and, above all, in the spinal chord. As the process of dentition is so intimately connected with the aggression of laryngismus, it will be proper to commence with a few remarks on this part of the subject.

LANCING THE GUMS.—As these spasmodic attacks occur, with very few exceptions, during the period of dentition, it will readily be understood that there is, in all cases, a necessity for examining carefully the state of the gums. Should they be full and swollen, inflamed, or giving evidence in any way that much irritation exists at one part, a free lancing will prove highly beneficial: slight superficial incisions are of little service—to prove effectual they should relieve the tension of the gum, and, if possible, that of the investing membrane of the tooth also. There can be no doubt as to the importance of this step in many cases, and we shall thus, at least, remove one of the existing causes of the paroxysms, but in the repetition of this operation we must be guided by the same rules which would in other cases induce us to have recourse again to the remedy. An author of high repute has lately recommended that the opera-

tion should be repeated daily, and even still more frequently, as a most efficacious mode of treatment: to this proposition I cannot subscribe, for I believe that, in some instances, the irritation caused by the repeated applications of the lancet will cause as much mischief as that of the teeth themselves, and of one fact I am quite certain, that the *mental irritation* excited by the mere appearance of the operator, will in itself prove highly injurious, when he is recognised by the infant as the harbinger of approaching suffering.

There are cases in which the paroxysms are observed long before the teeth are near the surface of the gum, and, in these, the operation would be quite out of the question. I have known, also, cases of laryngismus, at a more advanced age, successfully treated, without the lancing having once been had recourse to. In more than one of the cases related in the present work, it will be remarked, also, that the operation was followed by a much stronger attack of the spasm than had previously occurred. The practical distinction will be, I think, in using this remedy according to the individual circumstances of each case; in some instances it may not be required at all, whilst in others its employment will prove highly advantageous, and may be frequently repeated. As I have just observed, the scarifications should not

be too superficial, and the lancet used should not be too sharp.

As it is most essential to avoid any unnecessary excitement of the infant, whilst liable to this disease, it becomes a point of great importance not to irritate it by unnecessary examinations: the mere looking at the gums, by forcibly opening its mouth, will sometimes alarm the child, and induce a severe attack. Dr. Addams, of Dublin, met with a melancholy case of this description. "A child, subject to these attacks, was brought to him, that he might see the great improvement which had taken place in its state of health, and to have its gums examined; the latter proceeding he declined, as the attempt, he knew, had on two former occasions brought on a paroxysm. The mother not being satisfied, and anxious that the gums should be looked at, undertook, herself, to separate the jaws, and, whilst doing so, a severe spasmodic attack came on, and in an instant the child was a corpse in her arms."

ABSTRACTION OF BLOOD. — This forms the next important question to be discussed in the treatment of laryngismus, but I must allow at once that no positive rule can be given, for we must be guided in our opinion by a consideration of the various complications which may arise, before we come to a definite conclusion.

In the treatment of a *simple* case of laryngismus, which I regard as dependent solely on irritability, I should not think for a moment of resorting to this remedy. Several practitioners have mentioned cases to me, in which even the use of one or two leeches produced great mischief, and this may be readily understood, when we recollect that even in cases of general convulsions, occurring in irritable delicate constitutions, bleeding, in place of benefiting, has been known in many instances to occasion much harm. It has been stated already that worms in the intestines will alone produce such an attack, and that the removal of the cause by a brisk anthelmintic purgative will at once put an end to the liability of a recurrence, without the least abstraction of blood.

Much caution will be, therefore, requisite, on the part of the medical attendant, in the treatment of laryngismus, when complicated even with general convulsions; and, as the result of my own observations on this point, I should be content with the application of a very few leeches to the head, under such circumstances.

The symptoms which would induce the employment of depletion are, "elevation of the anterior fontanelle, turgescence of the veins running across the scalp, flushed face, quick strong pulse, great wake-

fulness, intolerance of light and noise, great heat of head, or should there be present much stupor and sleepiness, slow full pulse, dilated pupil, eyes half closed, strabismus, or difference in size of the pupils, and twitching of the hands and feet;" this treatment would not be so much directed to the laryngismus itself, as to the general convulsions found co-existing with it. The constant application of cold spirit lotion to the head, or allowing a small stream of cold water to run for some minutes on it; the envelopment of the lower portions of the child in a small blanket wrung out of hot water; an enema of warm soap and water; the dashing of cold water in the face frequently, and the use of the ice cap to the heated scalp, will in such instances be attended with more benefit than the employment of repeated depletions. A free evacuation, also, of the contents of the stomach and bowels is necessarily more required in such a case than in the simple form of the complaint. In some of the cases to which I have alluded, a blister applied between the shoulders, and kept on for two or even three hours, with a piece of tissue paper or very fine gauze, interposed between it and the skin, will answer the purpose much better than the repeated application of leeches to the head.

Those authors who look on the disease as occasioned by enlargement of the thymus gland,

recommend the application of leeches to the throat; but I find that Dr. Hirsch's remedies for the paroxysms and convulsive tendency are the "eau de laurier cerise," and when the convulsions are more intense, doses of *musk*, *zinc*, or *assafœtida*: the leeches are applied every four or eight days, combined with blisters, and the use of brisk purgatives, "to favour the absorption of the thymus, and to diminish the functional activity of the lungs and heart;" but this treatment, Dr. H. adds, "should never be employed except in strong children." (*Hufeland's Journal*, 1835.)

Great care, then, is even required in the application of a few leeches in some cases of laryngismus. In Case 24, it will be observed that they were of necessity removed, and wine given, owing to the extreme depression immediately caused by them: this fact can be easily understood by the parallel instances of diseases in the adult, in which *nervous irritation, combined with debility*, will produce symptoms of great excitement, (as in delirium tremens, puerperal mania, &c.,) and yet depletion here would be extremely injudicious. In Case 20, again, it will be seen that on the application of leeches to the head a very strong paroxysm immediately supervened, combined with cerebral convulsions. The anterior fontanelle will be found in some cases of laryngismus to be

depressed instead of raised, the cheeks cold and pale, and the pulse quick but weak.

In many fatal cases death takes place simply by "the abrupt cessation of the act of breathing," without any convulsive action or symptoms of congestion in the cerebral vessels. In numerous other instances, of laryngismus, in which the paroxysms are severe, the child is lively, and apparently as well as ever, soon after their termination, whilst, during the intervals, not one special sign of cerebral congestion, or meningeal inflammation is remarked. Bleeding, in such cases, cannot surely be advisable.

Even when symptoms of cerebral congestion are associated with spasmodic closure of the glottis, it is not on this account incumbent on us to use very active depleting remedies. Irritation may aid much in producing them, and those remedies which are more peculiarly adapted to allay nervous irritability will thus remove the effect as well as the cause.

Exceptional cases may perhaps occasionally present themselves, as requiring more active depletion, but these will not invalidate the general rule.

The severe discipline, therefore, which has been recommended by some authors for the cure of laryngismus, is not required under any circumstances, and in the most usual form of the complaint will be actually prejudicial.

EMETICS have been by some authors strongly recommended for this complaint, as well as for general convulsions. When an attack supervenes on over-repletion of the stomach, of which several instances are mentioned by different writers, such a remedy may be advisable, but, under other circumstances, I fear it would be more likely to prove hurtful, than productive of any good effect.

PURGATIVES. — Regarding, as I do, *intestinal irritation* to be the most frequent cause of laryngismus, it will naturally follow that the removal of this cause should be, in my opinion, the means first adopted for its cure. In confirmation of the value of this class of remedies, I would again remark, that to whatever other cause the complaint has been attributed, whether to “congestion of the brain,” “hypertrophy of the thymus gland,” “enlargement of the cervical glands,” &c., all authors, without exception, are agreed upon the importance of giving purgatives, especially those of a mercurial character, and also upon the strict attention which should be paid to the diet of the infant.

In many cases, a complete evacuation of the bowels is alone sufficient to remove the symptoms altogether, whilst, in others, it has a temporary effect only, especially if an injudicious system of feeding should be still pursued. When the par-

oxysms are severe, and danger imminent, a dose of calomel, proportioned to the age of the child, should be given, followed in two or three hours by a teaspoonful, or more, of castor oil; the lower bowels may, in the meanwhile, be well emptied by an enema of soapy water alone, or with the addition to it of a little castor oil and common salt. It is astonishing in some instances what large and copious evacuations of thick tenacious fœces now take place, and this effect continues, perhaps, for the space of two or three days, if the mercurial preparations are given regularly in smaller doses, combined either with gentle saline aperients, such as the potassæ sulphas, the potassæ tartras, or with a repetition of the castor oil.

I have had occasion to observe, in several instances, that the purgatives have no lasting beneficial effect, unless they contain either calomel, or the hydrargyrus cum creta, and, in some cases, the former of these two remedies was required after the failure of the latter; the proof of their proper action on the hepatic secretions will be evidenced by the gradual disappearance of the clayey, putty-like viscid dejections, and by these being replaced by the usual yellow, or orange-coloured evacuations of infants; this change is not unfrequently the first proof of amendment in the case.

After having given one or more brisk purges of calomel combined with rhubarb or scammony, it will be still advisable to continue the same mercurial remedy in alterative doses of half a grain, twice daily, so as to gently stimulate the liver; and as acidity in the *primæ viæ* is present in the great majority of cases, the addition of two or three grains of bicarbonate of potass or soda will generally be found advantageous.

The combination of alkalies with the purgative remedies is especially indicated in the treatment of laryngismus, and on this account, lime water, ammonia in its different preparations, &c., should be given in conjunction with them.

The enemata also should be repeated, with an occasional dose either of castor oil or of the infusion of senna with manna.

With regard to the strength of the aperients, an observation of the late Dr. John Clarke should be borne in mind; that "children require much larger doses of purgative medicines, in proportion to their age, than adults." Still no severe cathartic effect is required, as our aim should be, merely to unload the intestines of the constipated masses generally contained in them, to regulate the secretions, and to remove undue acidity and flatulence.

The compound decoction of aloes will be found extremely useful on this account, as being a warm carminative aperient, and containing an alkali. The addition of an extra quantity of liquorice will, however, be requisite, in order to render it palatable to infants.

ANTI-SPASMODICS.—This class of remedies I hold to be invaluable in the treatment of laryngismus, both as to internal and external use: almost every writer on the disease, whatever is the opinion as to its primary cause, admits their value; and we therefore find, that in the works of Millar, the German authors, and those of a later date, the employment of anti-spasmodics, under some particular form or other, is strongly recommended. Dr. Rush, of Philadelphia, and Millar, placed the greatest confidence in assafœtida; Underwood, who trusted implicitly in anti-spasmodics, recommends opium and cicuta; ammonia and æther are admitted by Dr. John Clarke as serviceable, whilst the oleum succini was a favourite medicine with the late Sir H. Hallford, in the treatment of this complaint: Hirsch, and other German authors, dwell strongly on the utility of musk and assafœtida. We have the testimony also of various writers in the periodical journals to the same effect: thus Mr. Pretty relates that one of his cases, “in which the croupy paroxysms had

continued for several months, yielded to the use of assafoetida," this remedy having been strongly recommended by a medical friend. We can readily understand, that if laryngismus be essentially dependent on morbid excitability of the nervous system, anti-spasmodics and sedatives must, at a certain period of the complaint, prove of great benefit in tranquillizing the general excitement, provided that the special causes of the local irritation have been first removed by purgatives. Assafoetida, or musk, will occasionally succeed in arresting the symptoms, in some cases of simple convulsions arising from dentition, when leeching and purging have not alone had the desired effect: hence the notoriety of some of the old empirical medicines, which contained, generally, either valerian or musk. The importance of sedative remedies is well illustrated by a case of Sir H. Marsh, in which, owing to the severity of the disease, he recommended an injection of five grains of tobacco leaf in six ounces of water; "the specific effects of tobacco ensued in a marked degree, and it was remarkable, that for a month afterwards no convulsive symptoms reappeared."

In those cases where the bowels are in a very irritable state, the exhibition of a small dose of hyoscyamus, Dover's powder, the hydrocyanic acid, ammonia, or the combination of them, will often pro-

duce a most striking effect in subduing the tendency to the spasmodic paroxysm.

The following prescription is one which I have been in the habit, latterly, of employing with excellent results.

R Spiriti ammoniæ fetidi, ℥ss.
Tincturæ hyoseyami, ℥ x.
Syrupi aurantii, ℥ss.
Spiriti anisi, ℥j.
Acidi hydrocyanici diluti, ℥ v.
Aquæ, ℥i.

M. Sumat cochleare minimum ter in die.

As in all other diseases, so in this we find that there is no universal form of remedy applicable to each individual case; should the above, therefore, not prove speedily efficacious, the next formula may be tried:

R Pulveris valeriani, ℥ij.
Ammoniæ sesquicarbonatis, gr. viij.
Syrupi aurantii, ℥ss.
Aq. carui. ℥iss.

M. Tere bene simul. Sig. Pars sexta ter die sumenda.

The above forms may be given to children of ten or twelve months old, the doses of course being graduated according to the age of the little patient.

A stimulating embrocation, containing also some narcotic ingredient if applied to the spine, chest, and abdomen, will be followed with decided benefit in

numerous instances, especially when the hands and feet are affected by spasmodic contractions. In Case 18, in which the spasmodic action extended to the thighs, and to the muscles of the jaw, this remedy appeared to be the first which produced any effective result. The following is the formula which I have generally used.

R Tinct. opii, ʒiss.
Tinct. lyttæ, ʒj.
Linim. saponis, ʒiss.

M. Fiat linimentum bis, terve in die, illinendum.

The addition of four grains of extractum belladonnæ, or ʒss. of the tinct. aconitinæ, in obstinate cases, will increase the effect.

As laryngismus is very frequently accompanied by flatulence and distention of the larger bowels, an enema of soapy water, containing half a drachm of tinct. Assafœtidæ, injected into the rectum once or twice daily, will be often followed by marked benefit.

TONICS.—In the secondary part of the treatment, tonics will frequently be found to possess great influence in removing the lingering symptoms of laryngismus. The different preparations of iron and bark are those best adapted for the purpose, when purgatives and anti-spasmodic medicines have previously prepared the way for their employment: some judg-

ment, however, is requisite in selecting the appropriate time for commencing their use.

Sir H. Marsh has recommended half-grain doses of quinine every six hours for infants under one year old. In some cases I have found the tinct. cinchonæ, in doses of twenty drops every six hours, answer the purpose very well, but I have preferred generally the liquor cinchonæ cordifoliæ of Battley in doses of five or six drops three times daily, made palatable by the addition of syrup of orange peel. Bullock's ferro-citrate of quinine will answer our purpose admirably when a combination of the tonics is thought necessary.

Amongst the different preparations of iron, I still prefer the vinum ferri of the old London Pharmacopeia, but the ammonio-citrate, and the potassio-tartrate, are, owing to their comparatively slight taste, eligible forms of the same mineral, as they do not nauseate the little patient. In those cases which are really combined with a scrofulous taint, the syrupus ferri iodidi may be advantageously employed.

ON THE DIET OF INFANTS WHO ARE PREDISPOSED
TO CONVULSIVE AFFECTIONS.

SUCKLING.—Too great stress cannot be laid upon the importance of rearing all infants on breast-milk, but more especially those who have any strong predisposition to spasm of the glottis. This aliment, which is beautifully adapted to convey all the particles required by the body for its supply and renovation, should be exclusively administered to them during the ordinary period of suckling; and in individual cases it will be even advisable to continue this mode of nourishment far beyond the usual period.

The advantage attending it has been proved by several cases with which I am acquainted. Amongst others, I might adduce one of an eminent physician who was nurtured on breast-milk alone, until he had nearly attained his third year; but the most remarkable instance which has come within my knowledge is the following:—"A family of rank, who had been so unfortunate as to lose thirteen children in succession, during infancy, or at a very early age, (chiefly, I believe, from convulsive affections,) resolved, under the advice of the late Dr. Hamilton, of Edinburgh, to continue the process of suckling with their next

infant, by means of a succession of wet-nurses for a very lengthened period. The child never tasted any other food than woman's milk until she had attained the age of *six years*, when she was weaned; cow's milk was at first substituted, and gradually other articles of diet were introduced. The plan succeeded admirably, as she was the only one out of fourteen children who was reared, and is of robust and healthy constitution: a tolerable proof of this will, perhaps, be allowed, when I mention that the lady is now herself the mother of thirteen children. I may state that the information was given to me by the female who acted as wet-nurse at the time of weaning, and it has since been authenticated by the lady herself."

Such cases as these are, of course, exceptions, but they at least indicate the value of this mode of proceeding under similar circumstances.

In suckling an infant the milk afforded by the mother is naturally that which is best adapted for it, but instances are occasionally met with in which it appears to disagree altogether with the child, and cannot be continued with impunity; it is not the deficient quantity which incapacitates the mother in these cases from nursing her infant, but the presence of some noxious quality in the milk, for which it is difficult, if not impossible, to account. Amongst

other instances, a distinguished physician once mentioned to me, that his wife found herself obliged to discontinue nursing on every occasion after confinement, as her milk appeared to act almost like a poison on the children. We can, perhaps, form some idea of such noxious qualities residing in this secretion, when we recollect the utter repugnance which an infant sometimes testifies to its mother's breast, suddenly and inexplicably, until it is afterwards discovered that impregnation must have occurred about that period.

Hysterical paroxysms, repeated fits of anger, or other strong passions, have proved a temporary impediment to nursing, in numerous instances, by so affecting the character of the milk as to produce distressing symptoms, and even convulsive attacks in the child; whilst in other cases they have been followed by a total suppression of the secretion: Parmentier and Deyeux relate an instance in which the milk taken from a woman during a nervous paroxysm became, in less than two hours, almost transparent, and viscid like the white of an egg.

Some women are absolutely disqualified from nursing their infants by a non-secretion of milk; by the want of nipples; or from the intense pain and agony which invariably attend each attempt to apply the infant to the nipple, owing to the deep

fissures or abrasions on its surface.¹ Insuperable difficulties are thus often interposed to the act of suckling in cases where the mother may be most anxious to undertake the pleasing office of nurse, and in these it must necessarily be delegated to another female, or the more dangerous plan of rearing the infant by hand must be adopted. We should not, however, too speedily determine upon the inability of a mother to suckle her offspring, owing to the deficiency of nipple, or a retracted condition of it. I have occasionally seen the nipple, in an apparently hopeless case, gradually drawn out and rendered fit for use, by the exertions of a professed "Breast-drawer."

Some mothers unfortunately persevere in their ineffectual attempts to nurse their infants, until their own health is seriously affected: the unwillingness to abandon so sacred a duty can be readily understood.

Every female, on becoming a mother, should endeavour at first to suckle her infant, notwith-

¹ During the last week, I have had the opportunity of witnessing, at the General Lying-In Hospital, the good effect, in such cases, of a new breast-pump, the patented invention of a Monsieur Thiers: its action is much more easy and free from pain than that of any similar instrument, and by the addition to it of a simple apparatus, the infant is enabled to imbibe from it the newly drawn milk, immediately, and without the least difficulty.

standing any deficiency in the size of the breasts which would seem to argue against the attempt. I have very lately met with an instance in point, in a lady who came from the country to be confined, and who, from the very imperfect development of her mammæ, had been assured that she would be unable to nurse: in three days after parturition, the breasts had attained a very large size, and her milk was *inconveniently* abundant for some weeks afterwards.

WET-NURSE.—When it is found that the continuance of suckling is absolutely prejudicial to mother and child, especially if the latter be predisposed to convulsive attacks, it becomes important to secure, as speedily as possible, the offices of a substitute, by whom the duty may be carried on.¹ The inspection of the wet-nurse, in such cases, forms one of the duties of the medical attendant, and it is highly important, on several accounts, that it should be carefully conducted: her general good health, and capabilities of undertaking the office, both in relation to the supply of healthy milk, and to the proper formation of the nipples, are the points to which our attention should be principally directed.

¹ A wet-nurse may always be readily obtained by applying to the Matron of the Lying-In Hospital, and, I believe, also at other similar institutions in London, as a list is kept of women applying for the situation.

It is also generally considered to be of some importance that the age of the nurse's milk should correspond with that of the infant to be nursed, and Donné has stated, "that the milk globules vary very much in size at different periods of lactation." When a proper selection can thus be made, it is better to follow the above practice; but that it is not always absolutely required, may be proved by the statement of Sir Hans Sloane, before quoted, "that four of his children were successively suckled by the same wet-nurse."

A wet-nurse should be selected, if possible, between the ages of twenty-two and thirty-five, and where there is no experienced head nurse in the family, it is better that the wet-nurse should have borne more than one child, as her experience in the handling and general management of infants will be greater—a point by no means unimportant, as relative to their health and comfort, especially in cases of illness. She should be active and good tempered, and not of very fair complexion, nor of a lymphatic temperament.

The state of the skin, gums, and nipples, should be examined, and the inquiries should be directed in the usual manner of making them, when it is essential to discover the existence of any lurking disease in the constitution.

The milk should be a thin, white fluid, with a slightly bluish tint, almost inodorous; not too serous and transparent, nor too opaque, in its character, and it should possess sufficient tenacity to allow of its running slowly off the thumb nail, when a drop is placed upon it.

Objections have been sometimes made to a wet-nurse whose catamenia return during the time of suckling. I have known, however, several excellent nurses, in whom this occurrence was noticed, and the only inconvenience to the child which occasionally supervened, was temporary, and consisted merely of a slight disturbance of the system during one or two days at each period.

It is of the greatest importance that the diet and general habits of the wet-nurse should be strictly attended to. It not unfrequently happens that those who from actual necessity are obliged to undertake the office, have, at first, a plentiful supply of nutriment for the infant, yet by the sudden change from a spare to an abundant and over-stimulating diet, and by leading an inactive life, they soon show indications that digestion and assimilation are not duly and properly performed; the bowels become deranged, a febrile state of system is induced, and, as a necessary consequence, the secretion of milk is not only diminished in quantity, but the milk itself

becomes also deteriorated in quality, thus causing the infant to suffer doubly.

A wet-nurse should always be carefully watched, and care taken that no irregularity of diet, or in her habits, should occur. Long abstinence or over-feeding on her part should be equally avoided, whilst indolence and inactivity should be prevented by regular exercise, and some active duties should be assigned to her, such as she must necessarily have attended to, had she remained at home to nurse her own child.

Supplying the infant too frequently or too abundantly with breast-milk even, will cause much detriment by the over-distention which it occasions, followed by spasmodic action of the stomach and bowels, and sometimes by diarrhœa; this may be checked by regularity as to the times of suckling, and the quantity allowed, but no medicine will prove of any avail in arresting it, unless such precautions be first adopted.

Nature has fortunately provided a remedy to a certain extent for over-suckling, by inducing the act of easy rejection of the superfluity, when breast-milk, or any simple fluid only, is taken into the stomach, but this safeguard is removed when food of a thicker consistence is resorted to.

The infant should never be allowed, therefore, to

gain the habit of sleeping at the breast, or be accustomed to remain at it beyond a certain period : it is of the utmost importance that the infant should be suckled with regularity, and by encouraging this system, it will be found most conducive to the bodily health, both of nurse and child.

Much depends, in these circumstances, upon the tact and knowledge of the nurse ; the cry of hunger is easily distinguished from that of pain or fretfulness, and as different infants require a greater or less quantity of food, a judicious attendant will speedily ascertain the proper supply needed. The interval between the times of suckling must vary, therefore, according to circumstances ; but, as a general rule, it may be about two hours for a young infant, and be gradually lengthened as the age increases. It is astonishing to observe how soon after birth the young infant acquires certain bad habits, and if these are allowed to be formed, great difficulty is often found in overcoming them. Mothers and nurses thus often insensibly become the slaves of their infants, and dare not leave them for even half an hour at a time, as the breast is always the ready solace, and is given whenever the infant chooses to cry for it—a really good nurse, on the contrary, is able to soothe and amuse the child, until the proper time for nursing arrives.

“ The inhabitants of Bona Vista, Cape Verd Islands, have a ready and most extraordinary mode of providing wet-nurses on any sudden emergency, or when occasion requires. Any woman who has once borne a child, and is still within the age of childbearing, is available for the purpose. The breasts are fomented with a decoction of the leaves of the “*Iatropha curcus*,” and frequent suction of the nipple is afterwards had recourse to. Dr. McWilliam, who mentions this fact in his “ Reports,” saw the experiment tried most effectually, a copious flow of milk having been produced on the fifth day, after these measures had been adopted, in a woman who had not nursed for twenty months previously.”

This fact can be easily credited, when we recollect that, under peculiar circumstances, the other sex have on more than one occasion been known to furnish sufficient nourishment for an infant. The case related by the Bishop of Cork, in the “ Philosophical Transactions,” and that of Sir John Franklin, are too well authenticated to admit of any doubt on the subject.

Suction alone is known also to have caused the secretion of milk in young females who had never borne children: Baudelocque’s case of the young

girl, æt. twelve, who was shown to the "Academy," gave a convincing proof of this fact, by milking her breasts in the presence of the members.

WEANING.—It is always desirable that an infant should be weaned gradually, instead of being deprived suddenly of the breast. The stomach is thus prepared for artificial food, by giving the child one meal of this description daily; by degrees another meal may be added, and it is advisable that three meals in the twenty-four hours should have been continued for a few days, before the infant is totally severed from its nurse's breast. It is not essential that weaning should be had recourse to because the mother finds that her milk is diminished in quantity, and is insufficient for the sole support of the child. With some infants the combination of the breast-milk, and thin farinaceous food, seems to agree very well, and I have known several instances in which the latter was taken with benefit, whilst the mother was enabled to suckle twice only during the twenty-four hours, but immediately that weaning was resorted to, and the infant thus depended on artificial food alone, derangement of the bowels supervened, and the general health appeared to suffer. On this account, it is of importance in cases when there is a predisposition to laryngismus,

that in place of weaning altogether, the occasional meal of breast-milk should be continued to as late a period as possible.

The bad effects of weaning are not in general immediately observed; two or three weeks often elapse before they become visible, and I have known numerous cases of laryngismus to occur about this period. Millar, in treating of the complaint, remarked the great liability to danger in children recently weaned, and I have already quoted several instances in which the first symptoms of laryngismus quickly followed this event.

It is at least advisable that the time of weaning should be deferred as long as possible in all cases where either laryngismus or cerebral convulsions have once occurred: the benefit resulting from this precaution has been fully proved by the case lately narrated. As a general rule, I would recommend that a child subject to laryngismus should draw its principal subsistence from the breast until it attains its twentieth month, and it would be better in extreme cases to defer weaning altogether even for some months longer.¹

¹ The enormous mortality which takes place amongst the children of the poor, especially in large manufacturing towns, is owing, in a great measure, to the very great irregularity in feeding them. The mothers are obliged to leave them for many hours daily to the care of neighbours, whilst they attend to occupations away from home; and

FEEDING BY HAND. — When, from illness, or debility of the mother, there is an insufficient supply of milk, or when her nipples are so formed that the infant's mouth is unable to grasp them, the process of suckling cannot be carried on, and "feeding by hand" is determined on, the usual question proposed to the medical attendant is, "What is the best food

it is a well-authenticated fact, that, in order to quiet the infants as much as possible, and to save trouble to the attendants, narcotics are given to a great extent, which are of course followed by most baneful effects to their general health, and often prove fatal, by inducing convulsive attacks.

To obviate, somewhat, this sad necessity, a philanthropic member of the medical profession at Paris, Mons. Marbeau, in 1844, instituted, on a small scale, a daily asylum for infants, whose mothers were obliged to leave home to gain a subsistence. Careful nurses were appointed to take charge of them, the mothers returning at stated hours to suckle them, calling for them in the evening, and again returning them in the morning. A committee of ladies superintended the arrangements of the "CRECHE," aided by the advice of the medical practitioner, and the system has been found to answer so admirably that in almost every "arrondissement" of Paris, similar institutions, on a larger scale, have been speedily organized. Owing to the subscriptions and donations received, the payment required of the mother of each infant is reduced far below that which she had previously been obliged to make to her equally poor neighbour, and a clean, well-ventilated apartment, and active superintendence, are now substituted for close dirty rooms and negligence. The average expense of each infant is about eightpence per day, including rent, wages, food for those who are not suckled, &c., and of this sum the mother pays a small proportion.

The subject is well worthy the attention of philanthropic individuals in this country, where so many mothers of families are obliged to ab-

for an infant?" The answer which suggests itself, almost involuntarily, is, "*That which Nature provides for it.*" But if, for especial reasons, a wet-nurse is *decidedly* objected to, the only possible alternative is to find some substitute in food possessing as nearly as possible similar constituent parts and qualities as those which the human milk contains. Solid food is not received with impunity into the infant's sto-

sent themselves for hours together, in pursuing their occupations of charring, washing, &c. Admission would be eagerly sought for by those so situated, and the same good results, as to health and life, would, I feel sure, follow here, as in Paris, Lyons, and other towns in France. In Glasgow, I understand, the system has been tried with advantage; and its introduction would prove invaluable in all manufacturing towns, where women are employed during the day, in mills and similar establishments. It is, in fact, useless to attempt carrying out sanitary measures for the adult of the lower class, without at the same time making similar provision for a period of life in which the germs of disease are most likely to be sown; the healthy robust infant will in time become the equally robust artisan and healthy member of society, in place of gradually emerging from sickly infancy to squalid childhood, and eventually becoming the broken down inhabitant of the Union.

I cannot here enter into longer details on a subject of so much importance, although it bears strongly on the prevention of 'Convulsive Diseases of Infancy;' but I must refer those who are interested in the subject to the pamphlets written on it by Marbeau, Delhruck, Imbert, and others.

One of the best effects produced would be, the putting a stop to the enormous sale of Godfrey's Cordial, and similar noxious drugs, which is well known to take place at present in Manchester, Birmingham, Liverpool, and other manufacturing towns, for the sole purpose of "*quieting infants!*"

mach during the earlier months, for, as with the brain at an after-period of childhood, it cannot be forced prematurely. A case is related, by Zimmermann, of an infant who invariably was attacked by convulsions when food of thick consistence was given to it, (*Act. Soc. Zynick. v. 2;*) and similar instances must have been met with by all practitioners who have much experience in the treatment of infantile diseases.

Feeding by hand, to be successful, requires a most careful and judicious nurse; and in resorting to it, we should bear in mind that this plan involves the most rigid attention to the quality, quantity, and temperature of the food, regularity as to the time in administering it, and cleanliness of the apparatus by which it is supplied.

The chances of success in rearing children by this method will be always much greater in the country than in town. Thus, a family of three children had been brought up in infancy "by hand" at a healthy country village, when circumstances required that the parents should come to reside in London. The children born after this period were fed exactly in the same manner, and by the same nurse, but the first was severely attacked by laryngismus, although it struggled through it; the next fell a victim to the same complaint—and

the third, for whom a wet-nurse was provided, showed so strong a predisposition to the disease, that I feel persuaded the consequences would have been serious had the plan of rearing by hand been persevered in.

It is very properly insisted on by the generality of physicians, that the artificial food taken by an infant should be imbibed by *suction*; and there are excellent reasons for such a rule being observed. In the first place, it is the mode by which the infant is supplied with its natural aliment; the salivary glands are called into action by the exertion required; and the food is more slowly received into the stomach. The "bottle," which is generally used for this purpose, answers very well, its mouth being covered with parchment or fine washed leather, perforated by small apertures. Calves teats are also employed for the same purpose, but they are attended with more trouble, owing to their liability of becoming decomposed, unless kept in diluted spirit. An important advantage which the bottle possesses is, that it prevents food beyond a certain consistence passing through the teat attached to it, which impediment is not met with in the use of the pap-boat or spoon.

As in all cases of laryngismus, or other convulsive affections, we are naturally anxious to prevent the intestinal irritation being increased by any undue

acidity, great care should be taken to prevent a liability to this by the most rigid precautions as to the cleanliness of the bottle; it should be most carefully washed out after each meal, for the slightest particle of farinaceous ingredients will, if left behind, become acescent, especially in warm weather, and thus impart this noxious quality to the food which may be afterwards placed in it.

The greatest difficulty which I have always had to contend with, is the anxiety of the nurse to give, and of the child to receive, "thick food." The former thinks that it is much more nourishing, and that the child will fatten more upon it, whilst the latter, after once tasting it, is very likely to refuse all thinner potations. It is only the continued serious illness of the child, and the strongest solicitations on our part, that will ever induce the nurse to alter this plan of diet, and to become a convert to our physiological reasonings.

Some experiments as to the value of different kinds of food for infants were made by Professor Boër, at the Foundling Hospital of Vienna, owing to the large mortality which annually occurred in that establishment. In the average years, 20 children out of 100 attained the age of one year, but in bad years not even 10. "Twenty children were accordingly chosen as the subjects of experiment, and fed with

various articles, but no conclusions were obtained as to their comparative merits, since the greater part of these little subjects died within a few months!"¹

MILK OF DOMESTIC ANIMALS.—Woman's milk, when compared with that of some of the domestic animals, such as the cow or ass, is sweeter to the taste, less abundant in casein, less coherent, and its cream does not so readily form butter.

According to the experiments of Liebig (*Animal Chemistry*) and Dr. R. D. Thomson (*Experimental Researches, &c.*), the proportion of *curd* appears to be more abundant in asses' milk than in that of the human female, and it is very much more so in the milk of the cow. *Butter* is nearly in the same proportions in woman's and cow's milk, but much less in that of the ass; whilst *sugar* abounds most in the milk of the woman, next in that of the ass, and is least in cow's milk. When, therefore, we substitute cow's milk for the support of the human infant, we are obliged to dilute it, and to add to it a certain portion of sugar. Asses' milk bears a still greater resemblance to that of the woman, and is, therefore, in cases of serious illness, generally employed as a substitute, if it can be readily obtained. Still I have known several instances in which the infant's stomach was not able to tolerate it, but immediately

¹ Dr. B. Hawkins' Medical Statistics, 1829.

rejected it, although that of a wet-nurse was always retained.

In some countries goat's milk has been employed for infant's food. The Maltese goat appears to be the best adapted for the purpose; and I have lately known an instance of a lady residing at Tunis, who, owing to a deficiency in her own milk, has availed herself of the assistance of one of these animals; the infant thriving remarkably well on the two milks.

I am informed by a medical friend who has practised during some years in Jamaica, that it is there the universal custom to feed young infants on goat's milk, when not suckled by their mothers; it is not even generally considered requisite to dilute the milk, as it is thought to be much more easily digested than that of the cow.

In large towns we have to contend with two difficulties in regard to ass's milk—viz., the uncertainty as to a constant and regular supply, and its great expense, which is about equivalent to that of a good wet-nurse.

Cow's milk is therefore almost always employed by families of the middle and lower classes, and to adapt it to the infant's stomach it should be diluted with one-third or one-half its quantity of water, or of some other thin fluid.

When artificial nourishment is to be given to a child, I know of none better than that composed of two parts of cow's milk with one of thin barley water, or grit gruel, slightly sweetened: with some infants, in whom the stomach and intestinal canal have materially suffered from irritation, equal quantities of these fluids will answer the purpose still better at first, the proportion of milk being gradually increased as the stomach becomes able to bear the change: in some cases toast-water may be substituted as the diluent, with advantage. It is better that the milk itself should not be boiled, but that it should be added, when cold, to the heated diluent.

One very important fact to be remembered, relative to cow's milk when given to delicate infants, is, "that in large towns it is not generally procured in a pure state:" passing over the frauds so often committed in relation to it, we must not forget that the milk even as drawn from the udder of stall-fed cows, is not in the same condition as when it is obtained in the country. These animals, if kept without any regular exercise, in close, ill-ventilated stables, suffer quite as much, in their general state of health, as human beings would do under similar circumstances: and their milk cannot therefore possess the same good qualities as that of an animal

fed in pastures, breathing pure air, and living more in accordance with its natural habits. This circumstance is not sufficiently taken into consideration when we debate upon the propriety of removing sickly infants into the country; and the good effects resulting, as it is thought, from change of air alone, ought often perhaps to be partly attributed to the increased purity of its nourishment.

In some particular cases, the cream of cow's milk diluted with five or six times its quantity of water, appears to sit lightly on the stomach, and to be easily digested: in others, the milk requires at first to be largely diluted before it appears to agree with the little invalid, owing to the weakened powers of digestion.

In those instances where there is an excess of acid formed in the intestinal canal, the addition of a small quantity of lime-water to the diluted milk will be advantageous: about a table-spoonful to the half-pint is the proper proportion.

The popular notion of two milks disagreeing with infants is erroneous. I have known many instances in which the fallacy of this opinion was clearly proved.

ARTICLES OF DIET.—The flour of wheat is more nutritive than the other farinaceous matters, and

flour which has been baked, or thoroughly boiled for a considerable time in a tight bag, may form one of the articles of diet; should there be a tendency to constipation on the part of the infant, oatmeal may for a time be substituted, or if the bowels are too much relaxed, rice-water, in combination with milk, will prove advantageous. Those who have paid peculiar attention to the relative proportion of nutritive matter contained in the different articles of infantile food, find that in some of them starch occupies the place of the sugar and oil in milk, and therefore that in this species of diet there is not the necessary nutriment: it may, on the contrary, afford a predisposing cause for disease: and a remarkable confirmation of this fact, from an experiment made by Mr. Smith, of Deanston, is quoted. "At a time when sago was universally recommended as a cheap material for feeding cattle, Mr. Smith purchased a quantity of it, and employed it for fattening a number of calves, substituting the sago for a certain amount of milk: the animals appeared to thrive and grow fat, but in the course of the following year, every animal so fed died, some from inflammation, and others from incidental diseases, the accession of which he attributed to the use of the sago; the calves fed on milk alone exhibiting no symptoms of unusual unhealthiness."—(*Brit. and For. Med. Review*, April,

1847.) Dr. Thomson, of Glasgow, has attributed the above fact to the stronger calorifiant power which exists in these vegetable productions than in milk, and that they are therefore more likely to create fever and increase the tendency to inflammatory action.

When the infant has attained its third month, weak beef-tea, and chicken, veal, or mutton broth, carefully prepared, may form a portion of the diet. Oyster tea has also been recommended by some practitioners as nutritious and easy of digestion.

Milk should form a considerable part of infantile diet in all cases, even where there is no peculiar aptitude to disease, but it is still more essential when there is a predisposition to convulsive affections.

When arrow-root is used as an article of infantile diet, it is better that it should be *boiled* for a few minutes, in place of simply mixing it with hot water, as is generally the case.

It is evident, then, that attention to the diet of infants who are liable to convulsive diseases must be strict and unremitting. As a general rule, breast-milk should form their only nutriment, if possible, for the first nine or ten months, and the artificial food which is, after this, given in addition, should be of a consistence not much thicker than the milk

itself.¹ Light broths, carefully prepared, may gradually form a portion of the diet table, but solid animal food should not be given before the child has attained its eighteenth month, if the molar teeth have then made their appearance; but in many cases it will be advisable to defer its use, till the child is two years old. It certainly must be considered a great error to give animal food to a young infant before its grinding teeth are ready to masticate properly.

No universal rule will hold good as to the diet of children. Some infants require food more nutritious in quality, and in larger quantities, than others of the same age. Those who are much accustomed to witness the treatment of infants, are aware, that a description of food which agrees perfectly well with one child, will totally disagree with another, and hence, any article of diet which appears to suit the infant should not be needlessly changed.

When the child is a few months old, feeding at night may be wholly discontinued; five meals daily, at regular intervals, will answer every good purpose, and no description of food should be given in the intervals.

¹ BACON, a close observer of facts, has remarked that "children partake more of the nature of the mother the longer time she has nursed them; and that those children which most resemble the mother will be generally found to have a greater claim to longevity."

CHANGE OF AIR.—This subject has been already discussed at some length, whilst treating of the different causes of laryngismus, and several instances have been quoted in which the removal of patients suffering from the complaint, into a purer atmosphere, was attended with the happiest results.

Every effort should be made also to procure as free and pure an atmosphere as possible for the child, whilst it is under treatment in town. It is most essential that the “nursery” should be airy and well ventilated, that its temperature should be equable, varying only from 60° to 65° , and that all sudden vicissitudes in this respect should be carefully avoided. The rooms should be large and commodious, with a good aspect, and it is desirable that they should not be on the uppermost story of the house, as they are there more exposed to the intense heat of summer, and to the corresponding low temperature of winter. In some peculiar cases of laryngismus, hygrometric warmth may be introduced into the apartment, and will prove useful in allaying the irritation of the glottis. The most easy mode of obtaining it, is that recommended in one of the periodicals, by Dr. Durrant, of Ipswich—viz., by attaching a tube of about six feet in length to a common tea kettle placed on the fire, the other

extremity of the tube being carried into the room, and supported by any simple means.

Confined air about the infant's bed is extremely prejudicial in cases of laryngismus. So impressed have I always been with this opinion, that in several instances I have had the infant removed down into the more spacious drawing-rooms during the greater portion of the twenty-four hours, and with marked advantage.

In one of the cases which I have narrated, the parents, who were in humble circumstances, found that the infant was always attacked with the most violent paroxysms whilst lying in the bed with them, and that the most effectual mode of checking the attacks was by taking the child out into the open air for an hour or two, as soon as daylight permitted them to do so.

In fine weather it is advisable to keep the little invalid out of doors, for some length of time, daily: the fresh air allays irritability, and is equally advantageous as with children who are suffering simply from the process of dentition; they appear to be soothed by respiring it, and those who have been restless and fretful whilst in the house, then often sink into a peaceful slumber of some duration. It is not advisable, however, to follow this course when the atmospheric changes are rapid and severe.

In some cases of laryngismus a removal to the country is absolutely indispensable, in order to save the infant's life; and in extreme instances even it has produced an immediate good effect. When the general health is much improved, but the spasmodic action of the glottis still lingers, and is not subdued either by medicine or regimen, change of air will generally complete the cure. Dr. M. Hall mentions a remarkable case of this description, "which arose apparently from a state of torpor, or constipation of the bowels; it had been a severe case attended by emprosthotonos, and although it seemed to linger during the use of other remedies, change of air suddenly removed the disease." In whooping-cough the same occurrence frequently takes place.

I have sometimes found that when a removal to one locality has not been attended with the expected favourable result, a still further change has soon proved beneficial.

I have endeavoured to show, in the foregoing pages, that as "an improper description of food," and "impure air," are the most frequent causes of "spasm of the glottis" in infants; so likewise that

the most efficacious mode of treatment consists, in substituting the nourishment provided by Nature, (or that at least which is as nearly allied to it as possible,) and in conveying the patient to a more healthy atmosphere.

Our first duty is to remove from the bowels the essential cause of irritation—viz., the remora or undigested masses which gradually have collected there; and to induce the return of a healthy functional action of the liver; our next endeavour is to subdue the spasmodic action, which has become habitual, yet is certainly under the control of medicinal agents, when the exciting causes are quite removed. Medicines, and liquid artificial food, will be alone sufficient, in some cases, to enable the infant to struggle through the disease; but experience convinces us that the cure will be much more certain and speedy when we resort to 'the total change of diet and air.

I have appended to this work the details of twenty-six cases which I had entered in my notebook: of many which have come under my care, I had, from pressure of business at the time, no opportunity of preserving any memoranda whatever; whilst in others they are so scanty as not to enable me to offer them in a detailed form. Of the latter

number, amounting to ten, I may mention, that they all occurred either after weaning, or when feeding by hand was much resorted to. The following are examples:—

The child of a medical friend was weaned when five months old; within a month after this it had the crowing inspiration frequently, and once or twice had been attacked by general convulsions. Living in the suburbs of London, it soon recovered under the use of mercurial purges, anti-spasmodics, and very thin food.

In another case, the child, eight months old, had been partly fed by hand for some time, and since weaning altogether, had become very excitable, and subject to suffocative paroxysms; the bowels were much deranged, but the health was otherwise good.

In another, the infant, seven months old, had been fed by hand solely for some time past: the parents had previously lost a child from laryngismus.

In a fourth case, a female child fourteen months and a half old, had been reared by hand for some months previously, and was apparently in robust health; symptoms of laryngismus, however, gradually appeared; the child became very fretful, could not sleep for any proper time, and started at the least

noise; the bowels were much constipated, and the motions were of a pasty, white description. Opisthotonos came on more than once, and the convulsive paroxysms were very frequent. The mother of the child attributed the disease to *overfeeding*; by reducing the diet considerably, and the use of calomel and castor oil, the symptoms were speedily alleviated.

Three children in one family became subject to laryngismus owing to improper diet; there were no symptoms of head affection in either of them, and all recovered by the use of purgatives, followed by a course of valerian combined with ammonia.

One of the fatal cases to which I have previously alluded, was a male infant, who was suckled up to the ninth month, and afterwards principally fed upon thick panada and farinaceous food; he was a fine, healthy-looking child, but was always, from his birth, subject to constipation. When a twelvemonth old he was attacked occasionally by stoppage of the breath, with crowing inspiration, but it invariably occurred whilst he was lying down; raising him up from the recumbent position always checked the paroxysm, during the early period of the complaint. The motions were of a very light colour, and they evidently, from the description of the family medical

attendant, did not contain the proper bilious secretion.

The paroxysms varied much in frequency, I learned, the child sometimes having twenty in the day, whilst at others only one occurred during the week. No cough, wheezing, or cerebral symptoms were observed.

The gums had been frequently lanced, and gentle aperients prescribed, followed by carminatives. I had but one opportunity of seeing the child, for a sudden paroxysm carried him off soon after, when seventeen months old.

APPENDIX OF CASES.

CASE I.

Laryngismus occurring soon after weaning.—Carpo-pedal spasms.—Speedy relief by purgatives, anti-spasmodics, and change of air.

A FEMALE infant, nine months old, had been attacked by repeated catchings of the breath, attended by a crowing noise in inspiration; the face was much flushed, and bore evident marks of distress and apprehension; the thumbs were drawn inwards across the palms of the hands, and the wrists were bent downwards, as were also the toes. I was informed that the parents had previously lost an infant, who had died suddenly under similar circumstances, and they were quite prepared for the same result in the present case.

The child had been weaned five weeks since, and the symptoms had commenced soon afterwards, gradually assuming a more severe character. As the gums were rather hot and swollen I scarified them freely, and the secretions of the bowels being much disordered, I prescribed one grain of calomel night and morning; the latter dose to be followed in three hours' time by some castor oil. The anti-spasmodic mixture (vide p. 124) was also immediately given. The spine was rubbed every six

hours with the embrocation, and the food was reduced to a much thinner consistence than that to which it had latterly been accustomed.

On the following day the spasmodic contractions of the hands and feet, as well as all the other symptoms, had entirely disappeared, and by a rigid attention thenceforward to diet, with a short residence in the country, the child continued well.

CASE II.

Laryngismus after weaning.—Violent spasmodic contractions of the hands and feet, the head bent back towards the spine.—Gradual extension of the fingers.—Cure.

May 2nd, 1847.—I was requested to visit a female infant, nine months old, who for the last three days had suffered, especially on awaking, from slight catchings in the breath, with a whooping noise. A more severe attack, however, had just supervened, and on my arrival I found that the face still presented an aspect of distress, the brows were contracted, the thumbs drawn across the palms, and not only were the fingers and toes strongly flexed, but the wrists and insteps were contracted, swollen, and extremely painful when touched; the head had also within the last few hours been bent back towards the spine, and was occasionally drawn still more in that direction.

The child had been fed by hand during the last four months, and had suffered, I found, from a similar though milder attack some weeks previously; but this had speedily yielded to the effect of purgatives and anti-spasmodics. The mother had died when the infant was four months old, and the surviving parent was exceedingly anxious, from having previously

lost an elder child, when fifteen months old, from the same disease.

As the gums were rather prominent, I considered it prudent to lance them; and to remove the constipation which had existed for the two previous days, two grains of calomel were immediately given, followed, in four hours after, by a dose of castor oil. The usual embrocation was applied, and the anti-spasmodic mixture was administered after the bowels had freely acted.

May 3rd.—The child, which had been put on a milk-and-water diet, was much better; there was no catching of the breath during the night; the bowels were freely opened, but the motions were of a very light colour, having a pasty consistence, without any admixture of bile. The hands and feet were not now clenched, but there was still evidently a tendency to this condition, as shown by occasional twitchings of the fingers and toes. The remedies to be continued, and two grains of grey powder to be taken every four hours.

May 4th.—The child considerably worse; the catchings frequent, the hands and feet much clenched, and painful to the touch. During the paroxysms the tongue was protruded, and appeared of a livid colour, but the face was not affected; the head is forcibly thrown back; the child cries frequently, evidently suffers much, and cannot sleep.

An enema, containing $\mathfrak{z}\text{i}$ of tincture of assafoetida, to be given immediately. Continue the other remedies.

Eleven P.M.—After the injection, large lumps of offensive hardened faeces came away, affording much relief, as the child slept directly afterwards for an hour and a half: the hands and feet are better, but not free from contraction, and the child is more cheerful.

May 5th.—The child had passed a bad night, cried much, and had not slept; it has, however, been dozing for the last three hours. The catchings were numerous during the night; the hands and feet are in the same condition as yesterday.

and have large red spots on them ; there is a distressed expression of countenance, but no cerebral convulsions have occurred.

R Hydr. c. cret. gr. iiss.

Pulv. Doveri, gr. iss.

M. Fiat pulvis bis die sumendus. Rep. Medicamenta.

May 6th.—The paroxysms were frequent during the night; the feet, however, seem not so contracted or swollen, but the hands are still clenched, with the exception of *one* forefinger, which the child can now move. At the commencement of each paroxysm the little patient screams, and attempts to tear the protruded tongue; the countenance, instead of possessing its usual rosy hue, is pale; there are twitchings of the muscles of the face, and the child, whilst lying down, often suddenly appears obliged to assume the upright position.

Twice only during the night was the child tolerably quiet, and that but for a short time. The nurse remarked that occasionally there was a strange whistling noise in the breathing, and that the child then presented a dark appearance round the mouth and eyes.

Several white pasty motions have been passed, one of which was copious, and a large quantity of urine has been voided. The child perspires violently about the head; she can swallow without difficulty, has slept latterly, and is now able to move *two* fingers.

May 7th.—I had repeatedly and strongly urged the propriety of removing the child out of town, but its nearest female relative was so strongly impressed with a conviction that it must die, (like the previous child,) that I found it was of no use to argue the question farther. The little patient was, in fact, so ill during the past night, that its attendants did not expect it to survive until the morning; it screamed constantly; there was a great deal of muscular twitching in different parts of the body, but no catchings of any importance, and no cerebral convulsions occurred. On visiting the child

in the morning, I found that the feet were not bent, the thumbs, however, were still clenched, but it could now move *three* fingers, but not the little one, nor the thumb. At this time the child was evidently under the influence of the opium contained in the Dover's powders, and although with the half-closed eye &c. it presented an unpleasant aspect to the bystanders, still the symptoms were on the whole alleviated. Cold spirit lotion to the head had had the effect of soothing it, and towards evening several motions containing bile had been passed; the perspirations about the head were not so copious, the urine was still abundant, and in place of starting and moaning in its sleep, the child became more composed and cool. It was again visited late at night, and was then sleeping tranquilly, and evidently much better. Sickness had latterly become rather a troublesome symptom.

May 9th.—During the last two days a great amendment has taken place; no paroxysms nor even catchings of the breath have occurred; the alvine evacuations continue of a bilious character and of a much better quality. The sleep is good, and without any starting. The hands are now quite open, but there is still a tendency to close the thumb inwards. No sickness; the urine is not so plentiful in quantity; there is a slight cough, but it is loose, and relieved by expectoration. Cold broth and beef tea have been substituted for the milk-and-water, and appear to agree with the stomach.

An enema of soap and water. Hydr. chlor., gr. iss. nocte; ol. ricini, mane. Rep. embrocatio. Omit mixture.

The subsequent amendment was so rapid, that after the 11th of May I was not required again to visit the child. It remained, however, in London for about a month afterwards, but on going into the country it improved so much in appearance *in two days*, that a relative wrote to inform me that I should hardly know the child. No return of the complaint has ever since occurred.

CASE III.

*Laryngismus depending principally on irregularity of diet.—
Severe spasmodic contraction of the extremities.—Gradual
re-extension of the fingers.—Recovery.*

May 17th, 1847.—A respectable woman brought her child, æt. fourteen months, as a patient of the Northern Dispensary, for my opinion. It was apparently healthy, and was the finest infant of five which she had borne. It had cut eight teeth, and although still occasionally suckled, was in the habit of feeding with the parents; it had meat occasionally, and was, by the mother's account, *very fond of cheese, potatoes, greens, and beer.*

About a week since, after a slight attack of bronchitis, the child was affected by a violent convulsive catching of the breath; its face assumed a purple hue, and it was quite insensible, apparently, for upwards of five minutes; a whooping noise was also heard during this violent paroxysm. The mother now recollects that a similar attack had occurred four months since, and that some slighter paroxysms had subsequently taken place. Latterly they have appeared frequently, especially on the child's awaking; and startings during sleep, with other symptoms, now occasionally warn the relatives that an attack is about to occur. A strong paroxysm took place yesterday, but to-day none as yet have appeared.

On examining the child I found the thumbs drawn across the palms, and all the fingers forcibly contracted, excepting the forefinger of the left hand, which was rigidly extended, and could not be bent; on attempting to do so the child evidently suffered much pain. One practitioner, who had seen the case, thought the finger was dislocated. The toes were strongly flexed, and both the insteps, as well as the backs of

the hands, were much swollen. The bowels have been scantily relieved of thick, pasty, curdled motions, tinged with bile; the gums are swollen, and the child has cried violently, as if in pain, more especially since the attack of yesterday.

The gums to be lanced.

R Calomel, gr. ij.

Magnesiae, gr. vij.

Ft. pulv. statim sumend.

The antispasmodic mixture and embrocation to be used.

May 21st.—There is a slight cough, with some wheezing, but it does not bring on the catchings, nor is any whooping noise now heard. The infant still starts often during its sleep. On the 18th, after its visit to me, there was a strong paroxysm, and on the ensuing day four very severe attacks occurred, each lasting for some minutes, the face being dark, the tongue protruded, the head thrown back, the eyes turned up in their sockets, with much convulsive struggling, but without any whooping noise: no other attacks, however, have occurred since the 19th inst. By some mistake the gums were not scarified: the bowels have been freely relieved, and the child is very much improved in appearance; is more free from distress, and the hands and feet are not so much swollen, nor so painful.

The patient has been kept in the open air as much as possible, and yesterday, although there was a strong cold wind, the child did not seem inconvenienced by it. The mother states that it will not lie with much covering on it in bed, but that it throws off the clothes, and appears to desire as much air as possible.

As the motions were not yet of a healthy character, a dose of castor oil was prescribed, and some ipecacuanha was added to the mixture, on account of the wheezing.

May 25th.—The cough and wheezing still continue, and the respiration is impeded, but there is no catching, nor has any

paroxysm occurred since the 19th. The thumb continues still strongly flexed, but some of the fingers seem more supple, and the child can now hold substances in its hand. The bowels act regularly and properly.

June 3rd.—For the last week no cough or wheezing have been observed. The fingers in succession have become moveable, and the thumb for some days past has not been drawn inwards.

The child's health after this was excellent, and from inquiries made some time afterwards, I learned that it had not again suffered from the complaint.

CASE IV.

Laryngismus from injudicious feeding.—The head retained in a bent position during three weeks.—Carpo-pedal spasms.—Loss of sight.—Restoration of health and vision.

April 19th, 1847.—I was requested to see the child of a poor woman which was said to be afflicted by some unusual complaint. The infant, five months old, was of healthy appearance, and still suckled, although likewise fed by hand, and, from the mother's account, not very judiciously. Three weeks previously it had been seized with wheezing and difficult breathing, attended by sudden catchings of the breath, and twitchings of the muscles of the hands and feet. In a short time after this the head became drawn backwards towards the spine, in which position it has continued ever since; the child is unable to move its head forward even whilst suckling, and on these occasions the mother is obliged to place the infant in a most awkward posture, so as to enable it to apply its mouth to the nipple: the lateral motion of the head, however, continues free.

For the last two days everything taken into the stomach has been immediately rejected; the bowels are very irregular, the motions have a sour smell, are of a knotty, slimy consistence, and green colour, and the child is much troubled by flatulence. When not asleep it moans or cries constantly, and is apparently in great distress; it has, however, by the mother's account, not slept for more than ten minutes at a time during the last fortnight. Any slight noise causes it to start, and brings on a fit of struggling, attended by a whooping noise and apparent suffocation; yesterday the face became quite blue during two of the paroxysms, which were succeeded by violent trembling; the fingers and toes have not been clenched.

As the nature of the case was very evident, I recommended the infant to be confined entirely to breast-milk as food, and prescribed a small dose of calomel and rhubarb; soap-and-water injections to be used twice daily, and the usual antispasmodic mixture and embrocation to be employed.

April 21st.—The child appears much better, and is not so fretful; the paroxysms have nearly ceased since taking the second dose of the mixture, but one severe attack came on yesterday. The head is still retained in the same distorted position, but the infant suckles with greater ease, and the sickness has been entirely checked. The bowels are more relaxed, and the motions appear of a thinner consistence; the sleep is more calm, and is undisturbed for an hour at a time, but it invariably becomes worse at night, owing, most likely, to the confined air of the bed, in which it lies with its parents. Although so much better in other respects, the thumbs are now drawn inwards on the palms of the hands, whilst the fingers and toes are also contracted. Rep. Medicam. Ol. ricini, $\mathfrak{z}\text{i}$, statim sum. An enema containing $\mathfrak{z}\text{ss}$ of tinctura assafoetida to be given twice daily.

April 23rd.—Very hard lumps of green-coloured faeces came away with the injections, but have been since followed by motions of a thinner consistence. The infant can now

move its head forward occasionally, but the bent position towards the spine is still the usual one; no fits whatever or catchings have occurred since its last visit to me: the child sleeps for two or three hours at a time, is much easier, and the expression of its features is of a more placid character; the thumbs are not drawn inwards to so great an extent, and the sickness has not returned.

R Pulv. scammon. gr. ij.

Hydr. c. creta, gr. ij.

M. Ft. pulv. omni nocte sumend.

The embrocation was increased in strength, and I recommended the infant to be kept as much as possible in the open air, as the circumstances of the parents would not allow of its removal to the country.

April 26th.—The child has been able to keep its head in the proper position since yesterday, three weeks having now elapsed since it had the power of doing so: there is a red indented mark at the flexure of the neck, at its back part, caused by the pressure. The child did not cry last night, as it had previously done for some time past, and it slept for four hours consecutively; the bowels are in much better order, but the thumbs are still somewhat drawn inwards, and the fingers are contracted. There has been no paroxysm nor even catching of the breath for the last six days, and the child appears tranquil and happy. (Rep. Medicam.)

April 30th.—A slight paroxysm occurred on the night of the 26th, but the child has continued to improve notwithstanding. The fingers and toes are not now bent inwards, and the head is perfectly free in its movements; the infant sleeps well at night, and is quite cheerful.

June 2nd.—The mother brought the child that I might see it, although there had been no return whatever of the previous symptoms, but she thought that its vision was impaired, and

that it had been so for the last week. On carefully examining the eyes the pupils are found to act irregularly, and to be dilated; the child squints occasionally, I am informed, and there is no doubt that it is totally unable to discern any object. Two grains of grey powder, with the same quantity of bicarbonate of potass, were ordered to be given daily, with ζ ss of the vinum ferri.

On June 14th, when I saw the patient again, the squinting had disappeared, and by July 13th the sight was perfectly restored. In the meantime, I had been obliged to discontinue the powders, as their action on the bowels was too strong, and they caused sickness, but the iron was persevered with; one tooth had appeared during this period. At the commencement of August the child was again brought for my inspection; it was then plump and fat, could see distinctly, and there had been no return whatever of any unpleasant symptom.

CASE V.

Laryngismus occurring in an infant fed by hand.—Lancing the gums.—Reduced diet and purgatives.—Recovery.

For the notes of the following case I am indebted to Mr. Powell, under whose care the patient was.

E. M., æt. twelve months, a healthy child, but whose brother and two sisters had died during infancy, and one of them from laryngismus. This infant had been brought up by hand almost from its birth, and the crowing inspiration was first observed when it was seven months old, and cutting the lower incisor teeth. The gums having been lanced, and purgatives given, the croupy noise disappeared until the superior incisors came through the gum; but the complaint has con-

tinued more or less since that period, although it has always been relieved for the time by lancing the gums.

The noise and catching of the breath gradually became more frequent, occurring sometimes whilst the child was asleep, or when startled; the slightest noise, however, being sufficient to occasion a paroxysm. No cerebral convulsions were observed. The mother remarked, that the symptoms were always more severe when the child *had a full meal*, or if *solid food* was given to it. During an accidental attack of bronchitis the crowing noise was not heard. The child was kept on milk diet, the gums were frequently lanced, and magnesia occasionally given; from this time the child gradually recovered, its sleep becoming calm and undisturbed, the bowels in a proper condition, and there has been no return of the paroxysms.

CASE VI.

Laryngismus soon after weaning.—Remarkable intermittent character of attacks.—Purgatives.—Change of Diet.—Recovery.

For the notes of this case I am indebted to Mr. Erasmus Wren, of Brownlow Street.

E—— W—— had been always a healthy infant until it attained its *tenth week*, when, owing to its mother failing in her supply of milk, and that which she did furnish being of an unwholesome quality, the child's bowels became so deranged, that it was found necessary to *wean* it. After trying food of various kinds as a substitute for the breast-milk, baked flour, prepared with good new milk, was at length found to answer so well, that by the time the child had reached its fourteenth week, it had completely recovered its pristine ruddy and plump appearance; at this period, however, it was ob-

served to breathe heavily in its sleep, and it had a most offensive discharge from each ear; nothing particular beyond this was remarked until the child was *five months* old, when attention was excited by a crowing noise observed on every occasion when in the act of awaking, and which was evidently characteristic of laryngismus. Strict attention was now paid to the nature of the faecal evacuations; occasional doses of grey powder and castor oil were administered, and from time to time the ears were gently syringed with warm water. The child was taken into the air whenever the weather permitted. Nothing more serious occurred until it had attained its *seventh* month, when the mother was aroused, during the night, and found the infant strongly convulsed, its eyes fixed, its arms and legs rigidly stiff, the hands clenched, and the toes bent firmly downwards. By sprinkling cold water upon its face it quickly recovered from this seizure, but not so with three others which occurred during the ensuing six hours; in addition to cold sprinkling, hot sponges were applied to the throat, and the child was immersed in a hot bath on each occasion before it recovered; three grains of calomel, followed by a strong dose of castor oil were given after the first fit; these acted freely, but the breathing was still oppressed, the crowing sound was heard each time the child awoke, the discharge from the ears continued as before, but it had no return of the fits until the following Wednesday morning, exactly one week from the time of the first serious attack. During the next four weeks one attack, and sometimes a second, came on each Wednesday morning, without there being anything peculiar to account for their doing so on that day in particular: on one or two occasions the child was laughing and playing when the fit commenced. So regularly did it return on this day (Wednesday) and so nearly did the hours of its recurrence correspond, that at last, in anticipation of an attack, a strong purgative dose of calomel and castor oil was administered on the preceding night, and this had the effect of stopping, or eer-

tainly altering the course of the seizures, for the child had no return on the usual morning, or during the subsequent week, but several fits occurred after that period. When a little more than *eight* months old the child cut its two first teeth in the lower jaw, but the fits did not appear to be materially aggravated during the few days preceding their appearance; the gums were not much swollen, and it was some little time subsequent to this that the worst attacks appeared. On one occasion, during the night, they recurred almost hourly, and the child was repeatedly placed in a hot bath, and two grains of calomel were given every three hours, until four or five doses had been administered. Up to this period the child had been fed upon one description of food (flour and milk), but it was now thought advisable to try a change of diet, and bread and milk was therefore substituted; this, for the first few days, did not seem to agree with the stomach, but it was persevered with, as the child took it very well, and breathed with far less distress; at the expiration of a week, its bowels, though much more relaxed than they had been whilst taking the flour-food, were comparatively quiet; the bad symptoms from this time entirely vanished, the child slept calmly, awoke without crowing, the ears ceased to discharge, and, in fact, no sign of the disorder remained. During the time that the child was suffering with this disorder, no symptom was discovered which indicated anything like cerebral mischief. Although it was the winter season, it was never thought requisite to confine the child to the house; it was frequently taken out, immediately after recovering from a paroxysm, and in no instance did this cause a return: on the contrary, the worst attacks generally occurred after the child had been kept in the house longer than usual. That the complaint was mainly referable to the condition of the bowels there can be no doubt. Various attempts were made during the illness of the child to change its diet, but, until the last time, the effect upon the bowels had been so severe, that the friends were always obliged to

desist, and on no previous occasion could we discover sufficient apparent amendment to encourage a perseverance with any particular article of food.

The three following cases occurred in the same family:—

CASE VII.

*Rearing by hand.—Laryngismus with general convulsions.—
Purgatives, antispasmodics, change of air, and diet.—
Recovery.*

March, 1844.—G. V., a female infant, was entirely brought up by hand on farinaceous diet. Very soon after her birth it was observed that she had occasionally slight catchings of the breath, but they assumed a more decided character when she was two months old. No particular notice, however, was taken of them by the attendants until the child was seven months old, as they were not considered to be of any importance. At this period, the symptoms became more severe, and I was requested to visit the patient. Small doses of hydr. c. creta were now given daily, combined with an aperient, and the following mixture was also prescribed:—

- R Spt. ammoniæ fœtid. ʒss.
Magnesiæ, ʒi.
Syr. rhei, ʒiss.
Aq. sem. anethi, ʒij.
M. Cochl. parv. j sextâ quâque horâ sum.

As very little effect was produced by the above medicines, after continuing their employment during a fortnight, it was arranged that the child should be sent to St. John's Wood; within half an hour of reaching the new abode, a severe con-

vulsive paroxysm occurred, accompanied by general convulsions, and this was followed by three other attacks within short intervals; for the first few days the little patient appeared to be worse, but the paroxysms gradually assumed a milder form, and never again amounted to actual convulsions. At this period, the diet consisted of ass's milk and thin farinaceous food. The following mixture was now given:—

R Spt. ammon. fœtid. ʒss.
 Moschi, gr. iiij.
 Pulv. rhei, gr. xv.
 Magnes. carb. ʒj.
 Syr. aurant. ʒss.
 Muc. G. acac. ʒiij. t. b. s.
 et adde Aquæ, ʒj.
 Spt. anisi, ʒj.
 M. ʒij. Cochl. min. j. bis die sum.

After being absent for three weeks, the child was again brought home, but did not again suffer from any recurrence of the paroxysms; and although the first tooth appeared shortly afterwards, she passed through the whole period of dentition very favourably.

CASE VIII.

Feeding by hand.—Laryngismus proving suddenly fatal at an early age.

This case occurred in a younger brother of the foregoing one—a fine healthy child, who was likewise fed by hand; when two months old, slight catchings of the breath, and other symptoms of incipient laryngismus occurred, which became more decided in character within the ensuing fortnight: tho

paroxysms were apparently by no means so severe as in the former case, and there was no symptom of general convulsions. The bowels were well regulated, the food kept as thin as the child would take it, and the last mentioned antispasmodic mixture was given. The case was proceeding satisfactorily, as we all thought, and the infant looked remarkably well, but when three months and a half old, an unexpected spasm of the glottis suddenly carried off the little patient in a few seconds, almost without a struggle. On a post-mortem examination no unusual appearance whatever could be discovered.

CASE IX.

*Slight laryngismus whilst suckling.—Acidity in bowels.—
Calomel and antacids.—Recovery.*

A female infant, who on my recommendation had been provided at once with a wet nurse. Within the first month a mucous rattle was heard at times in the windpipe, and this noise occasionally returned until the seventh month, persisting for days together, but unaccompanied by any other symptom of laryngismus. The child being taken into the country on one occasion during its continuance, the symptom disappeared within a few hours. This mucous râle was confined to the larynx itself, and at no time was it perceptible in the chest; it appeared to occasion neither pain nor uneasiness, and was not followed by cough. At these times the alvine secretions were disordered, and had a sour smell, and the medicine which first appeared to have a decided effect in improving the state of the bowels and checking the noise, was a powder containing small doses of bicarbonate of potass, rhubarb, and ipecacuanha. One very slight attack of spasm occurred within the first month after birth, another when the infant was six

months old, and at eight months there were ten or twelve similar slight paroxysms, but they were not attended with any signs of congestion. On these occasions two grains of carbonate of soda, taken night and morning, had always the effect of giving relief.

The child was weaned when thirteen months old, and shortly afterwards, whilst teething, she was very irritable, and the alvine dejections had a white, unhealthy character: a slight crowing noise also was frequently heard when she cried, but there was no apparent difficulty in the respiration. Two grains of grey powder, with three grains of carbonate of soda, were given, and the diet was made as thin as possible, without, however, removing the symptoms; one grain of calomel was, therefore, ordered night and morning, followed by magnesia and rhubarb, and by repeating this remedy once or twice, the bowels acted copiously; in the course of five or six days the noise disappeared altogether, and there has been no return of it since that time.

In the above case, a most marked predisposition to the complaint seems to have existed, as shown by the mucous râle at so early a period, and I feel no doubt that had the system of rearing by hand been here attempted, the disease would have developed itself in its most aggravated form.

CASE X.

Laryngismus arising from derangement of bowels—Purgatives, antispasmodics, and tonics, with change of air.—Recovery.

For the following details I am indebted to Mr. Acret, of Torrington Square, in whose practice the case occurred; the greater portion is in the mother's own words, as transcribed from a letter written by her to Mr. A. on the subject.

“The little boy was weaned at four months, but he had

always been partly fed, as there was not sufficient milk for him; his food consisted of biscuits boiled down to a jelly, and diluted with milk. He must have been about eighteen months old when the first symptom appeared; he had eight teeth at the time, and his illness came on with the double teeth. In the first week the attacks were very slight, but gradually became worse and worse: from the time of his birth, the bowels were never properly cleared, and they did not get into good order for many weeks. For a considerable time before his illness came on, his bowels were in an unhealthy state, the motions being at times quite white, like putty, at others, green or almost black; the stomach was large and hard, and there was extreme tenderness at this part on moving him. He had not a convulsive fit, but he was greatly convulsed, more or less, for two or three weeks, (paroxysms of laryngismus). He was at this time under the care of two homœopathic practitioners, but nothing they did had the slightest effect. I am not quite sure about his having cut a tooth, but my impression is that he did not, although his gums were lanced two or three times; the attacks were now too frequent to name—we thought it a joyful hour when that period had passed without more than one; I have known him to have three or four in that space of time, and his nights were far, far worse than the day. You know all the rest, and how little hope there was of his life.”

When Mr. Aeret undertook the treatment of the child, the paroxysms were of a violent description, and attended with the crowing inspiration; the thumbs were drawn across the palms of the hands, the toes flexed, and the alvine dejections were in a most unhealthy state; the bowels were enormously distended by flatulence, and the patient was much emaciated.

Two grains of calomel were given at night, with *ziss* of castor oil in the morning, and for the three succeeding nights one grain of calomel was prescribed, to be followed by a draught containing magnesia, rhubarb, dill water, and a few

drops of the compound spirit of ammonia. Large quantities of clay-like faeces were now dislodged from the bowels with very evident relief as to the symptoms: the paroxysms of laryngismus were also much subdued by the use of a mixture containing the spir. ammoniæ foetid.; tinct. card. C.; and aq. carui. As often as the symptoms indicated an attack of the paroxysms, a dose of this anti-spasmodic mixture was given, with the effect of alleviating their violence, and sometimes of stopping them altogether for a time. When the urgent symptoms had been subdued, the child was sent to Hampstead Heath, where he passed the first night without a single paroxysm. The general health of the little patient was so much improved that the nurse under whose charge he was, now became inattentive to the state of his bowels, and the same injudicious feeding as formerly was again resorted to. In the course of a few days afterwards, so strong a convulsive seizure occurred, that the attendants for a time thought the child was dead. On recovering from the attack, he was well purged, very thin food was substituted in place of that lately given; antispasmodic remedies were again employed, and for some time afterwards three drops of the tinct. ferri ammon. were administered in water three times daily. From the commencement of this plan of treatment no symptoms whatever of laryngismus were again observed.

CASE XI.

Feeding by hand.—Laryngismus.—Speedy removal by purgatives and anti-spasmodics.—Recurrence of the complaint a year afterwards.

February, 1846.—E., a male infant of robust and healthy constitution, was affected with the thrush shortly after birth; when two months old he was partially fed, and at the fourth

month was altogether weaned. Calomel had been prescribed, by a practitioner, for the thrush, but the remedy failed to remove the affection; the child's health became much deranged, and the bowels were much irritated. Different preparations of farinaceous food, such as arrow-root, prepared barley, or boiled flour, were in turn given to the infant, but nothing appeared to satisfy the child's appetite, and it was evident that what was taken was not properly digested.

On the 14th of February, 1846, an unusual sound of the voice was noticed, accompanied by a cry of distress. This cry was repeated at intervals, which in two days' time gradually became shorter, and it was now followed by a difficulty in recovering the breath. Asses milk had been substituted in the meantime as food, but the infant still suffered much from flatulence and indigestion.

On the 17th a very severe attack of the spasm having occurred, the mother of the child now recognised it to be the same peculiar disease as that of another infant which she knew I was attending at the time, and requested me to visit her child, in conjunction with her own physician. In consultation it was agreed that the anti-spasmodic mixture and opiate embrocation should be tried, combined with mild aperients. At our meeting on the next day the mother informed us that the medicine had acted like a charm, as the attacks had decreased immediately in number, duration, and severity, whilst the secretions had become of a much more healthy character. The substitution of "a good wet-nurse," instead of the ass's milk, was strongly recommended. One was procured on March 3rd, 1846, and the child had no return of the choking from that time till the 4th of May, 1847. At this period a noise was again noticed in the respiration similar to that which had preceded the former attack; but, as it was thought that the child was still kept to breast-milk and very thin food, a return of the paroxysms was not anticipated. The mother discovered, however, that the nurse had for a short

time past given crusts of bread daily to the child, and to this cause, and to the fact of the eye teeth and four molars all coming through the gums at the same time, the recurrence of the complaint was attributed. One suffocative attack took place soon after a lengthened fit of sneezing, whilst another happened on the evening of the same day, and was caused by fretting. The child was irritable and drowsy, and the bowels had not acted for twenty-four hours. A small dose of calomel was at once given, followed by an enema of soap and water, containing ʒss of tinct. assafoetida. The same embrocation and mixture were also again employed as on the former occasion.

The enema seemed to afford much relief after bringing away many dark, hard lumps, with a large quantity of gelatinous matter.

On the subsequent day two slight attacks followed the act of coughing, but were of a very mild character in comparison with the former ones. On the 6th, the child was as lively and good tempered as usual; and another powder and enema brought off a green and offensive dejection, followed by much flatus and a very yellow bilious evacuation.

The child, however, continued to have slight paroxysms for about three weeks after this period, and the bowels were much constipated, unless aperient medicine was given; he was now removed to the country, it not having been convenient for the parents to accomplish it previously.

Partial constipation continued for a week or ten days after his removal to Finchley, and was accompanied by the same slight cry which originally preceded the attack of spasm: both symptoms disappeared at the expiration of that period, and no return occurred afterwards.

The constipation was partly remedied by the use of brown bread made into very thin panada.

CASE XII.

Laryngismus immediately after weaning.—Pneumonia supervening.—Recovery from the latter disease, but sudden death from spasm of the glottis.

An infant, eleven months old, under the care of Mr. Bennett, as an out-patient at the St. Giles's Infirmary, was noticed as being a peculiarly healthy looking robust child, whilst suckled by the mother. She, however, soon after deserted it, and it was then *fed by hand*. Spasmodic catchings of the breath supervened in the course of a few days, and gradually increased in intensity; the child was also attacked by pneumonia, but it was remarked that the spasms were not worse during the presence of this disease than before its aggression. The inflammatory complaint was subdued by active remedies, but shortly afterwards a violent paroxysm of laryngismus suddenly carried off the little patient.

Mr. Bennett having a conviction at this time that the brain was the principal seat of the complaint, carefully examined that organ, with the aid of Dr. Harling, but no signs of previous inflammatory action were found; there was no congestion of the vessels, nor effusion into the cavities, and, in fact, no diseased condition whatever of the cerebrum or of its membranes could be discovered.

CASE XIII.

Laryngismus soon after weaning at seven months.—Purgatives, anti-spasmodics, and change of air.—Wet-nurse.—Recovery.

March 3, 1848.—A fine healthy male child, of nervous temperament, was weaned altogether at seven months, having been previously fed by hand to some extent. The diet had since consisted of barley, sago, milk, and broths, upon which food the infant apparently thrived well for three or four months.

On February 21st he was attacked by a *fit*, which lasted for half an hour, according to the mother's description. No catching of the breath had been previously noticed, but soon afterwards a crowing noise in inspiration was observed, and another fit supervened. When I saw the child, the gums had been twice lanced, and calomel had been given; but the noise continued daily, and was frequently accompanied by a difficulty in breathing: no teeth as yet had made their appearance; there was an eruption of a strophulous character on the skin, and the bowels were much confined. The thumbs had been drawn across the palms of the hand since the first convulsive paroxysm, but the toes were not affected, except during these attacks. A wheezing noise in the throat had been occasionally observed since the period when these symptoms first appeared.

Two grains of calomel were given at night, and castor oil in the morning. The anti-spasmodic mixture was also prescribed to be taken twice daily.

March 5.—The crowing noise has been heard several times, especially when the infant cries, but no convulsive paroxysms have again occurred. The nurse finds "that putting a cold key to the spine," always at once stops the noise. The rash has disappeared, the hands and feet are swollen, and occasionally clenched; large motions of a white pasty character have been passed; the gums are cool, and not swollen.

The diet is now altogether confined to a drink of two-parts of milk and one of water, and the following anodyne embrocation is to be applied to the spine twice daily:

R Tinct. opii, ʒss.
 Tinct. lyttæ, ʒi.
 Tinct. aconiti, ʒi.
 Linim. sapon. ʒi. M. Ft. embrocatio.

A powder containing one grain of calomel and two grains of bicarbonate of soda, to be given night and morning, with an occasional dose of ol. ricini. An enema containing ʒss of tinct. assafoetidæ is to be administered daily.

As the family resided at this time in a low, and not very healthy locality, it was decided that the child should be removed to Bayswater, if the complaint did not speedily give way.

This removal took place on the 7th, but the excitement of the journey caused a very severe convulsive paroxysm, which was checked by cold affusion to the head.

As the child, though much improved in all respects by the change of air, did not escape entirely from the spasmodic attacks, a wet-nurse was procured for him, and on the 11th, after some trouble, he was induced to take the breast; the favourable result which immediately followed was remarkable, for the bowels now became more relaxed, the motions assumed a better consistence, a yellow bilious character, and were not white, curdy, and pasty, as heretofore; the patient slept well, and with the exception of one very slight catch in the breathing, he has remained since this period quite free from any symptoms of the complaint.

CASE XIV.

Laryngismus accompanied by bronchitis, soon after weaning.—

Purgatives and removal to the country instantly checking the symptoms.

The three following cases I attended with the father of the children, a highly intelligent practitioner, to whom I am principally indebted for the details.

The *first* case was that of the eldest child, a boy, who was weaned when seven months old; two months after he was suddenly attacked, at seven P.M., by croupy breathing and loud crowing inspiration; great wheezing came on suddenly, and appeared almost to choke him with phlegm. I was requested

to see the child at eleven P.M., as the symptoms were becoming worse, although the father had already given an antimonial emetic.

As all the symptoms of bronchitis were present, though combined with croup-like paroxysms, between which a mucous râle was heard over all the chest, two leeches were applied to this part, followed by warm cataplasms; James's powder, combined with calomel and ipecacuan, was given at intervals, and a small blister was applied for a short time to the chest in the morning; the symptoms gradually gave way, but during their decline, the father of the child remarked that there were repeated attacks of the long-drawn crowing inspiration; owing however, to his not being conversant at that period, with this peculiar symptom, he considered it as a part of the inflammatory affection. A fortnight after recovery from the above attack, the child appeared heavy and irritable, the bowels were constipated, the motions being solid, and formed like those of an adult; and within two days he was suddenly attacked by a decided spasm of the glottis, attended by the usual loud crowing inspiration. The paroxysms returned frequently during the day, but there was no cough, and the respiration was perfectly natural in the intervals. As there was no doubt now as to the true nature of the disease, purgatives were given, and the child was immediately removed to Brighton, where he remained three weeks, completely free from any further paroxysms, although, during that period, the weather was extremely bleak and unfavourable, and two teeth were cut with much pain and suffering.

Four weeks after his return home, the child lost flesh and colour, and the spasms again attacked him; as the gums were swollen they were freely lanced, aperients were given, and minute attention was paid to his diet, but as these remedies did not arrest the spasm, the little patient was a second time removed from London to Sydenham, with the same immediate good result as before.

The father, in a communication to me, remarks that, although the irritation of teething might have been a cause of the general disturbance of the system, yet it did not appear to be a direct cause of the spasms, for whenever they occurred the gums were freely lanced, but without any visible good effect. The number of paroxysms generally amounted to seven or eight in the day, but from the moment of his removal to the country, on both occasions, they immediately disappeared.

CASE XV.

*Laryngismus attended only by the crowing inspiration.—
Removal out of town.—Immediate recovery.*

The second child, a girl, was *almost entirely brought up by hand*, and when nine months old, the crowing inspiration of laryngismus came on without any apparent cause: the bowels were not much constipated, neither did the gums present a swollen appearance; as a matter of precaution, however, they were occasionally scarified, but the operation on more than one occasion induced a paroxysm. The symptoms generally followed the act of awaking, and were easily excited by the least fright, or by any other strong emotion.

The general health was in so good a state, that no other medicines than aperients were given; after two months, the child was taken to the continent with the family; one paroxysm occurred whilst in the crowded cabin of the steamboat, but after this occasion she had no return whatever of the disease. I may observe that her first tooth did not appear until she had attained her eighteenth month. In the above case the crowing inspiration was loud, and was the principal symptom.

The *third* and *fourth* children had each a wet-nurse ; in the former no symptoms of laryngismus whatever occurred ; and in the latter, they came on when the infant was two days old, owing apparently to retained meconium, but after a few hours they disappeared, and never again returned.

CASE XVI.

Slight laryngismus during suckling.—No crowing inspiration.

—Disordered bowels.—Purgatives, alkalis, and sedatives.

—Recovery.

The *fifth* child, a boy, had also a wet-nurse, but not a good one, as she was subject to flatulence and disordered bowels, and was of a very nervous temperament. In November, the child was attacked rather severely, by bronchitis, and completely recovered from its effects, but in the following January his general health became much out of order : slight catchings of the breath were observed, but they were unattended by the crowing inspiration. The attack consisted of a gasping for breath, with discoloration of the lips and face, and firm clenching of the gums. Purgatives and sedative medicines, combined with an alkali, removed the symptoms in three days, and the wet-nurse was then changed. Similar attacks, though of a slight character, occasionally reappeared, but were always preceded by a disordered state of the bowels, and swollen gums.

The above case is one already alluded to, as following a somewhat similar attack in its wet-nurse : till that event, it had shown no symptoms of laryngismus.

CASE XVII.

Laryngismus preceded by cerebral convulsions occurring soon after weaning.—Change of air.—Recovery.

Cases are occasionally met with in which cerebral convulsions first appear, and when, by active measures, these symptoms are subdued, they are followed by laryngismus, which requires a different mode of treatment. The following case, which I attended, some years since, in conjunction with Dr. Merriman, sen., is an example of this peculiarity.

“G. A., a male infant, thirteen months old, of excitable temperament, who had been weaned for the last three weeks, had become very restless for some nights past, and appeared to suffer much from teething. On January 13th, the mother administered a small dose of grey powder, and another was given also on the ensuing day, but without any benefit. On the 15th, the patient being exceedingly heavy, fretful, and not able to retain any food on his stomach, I was requested to see him. I found the gums in the lower jaw much swollen over two of the teeth, and lanced them, but in ten minutes afterwards he was seized with a severe convulsion which lasted upwards of five minutes. The hot bath, and other usual remedies were immediately employed with good effect, but on the ensuing morning (the 16th) as the child still suffered considerably, the upper gums were likewise lanced: within four hours after, he again had two other convulsive seizures. Two leeches were now applied to the temple, but an hour afterwards the child was again attacked by a convulsion which lasted nearly twenty minutes: this was the last he had during his illness. On the 17th, two ounces of blood were abstracted by cupping between the shoulders, which operation materially relieved the symptoms. On the 18th, a cough having made its appearance, a pectoral mixture, and small repeated doses of grey powder and saline aperients were prescribed. The cough, however, continued till the

23rd, when it terminated in an attack of laryngismus. As the paroxysms soon assumed a severe character, the child was placed in a warm bath, two grain doses of calomel were given every six hours, followed by castor oil, and an embrocation containing tinct. lyttæ and ant. p. tart, was rubbed over the chest and spine; by this treatment the violence of the disease was subdued to a great extent. Not a day passed, however, without several paroxysms occurring, although of a milder character; various forms of purgatives and anti-spasmodic remedies were employed, and the child was supplied with food of very thin consistence; it was not, however, until the patient was removed to Highbury, on February the 16th, that the attacks appeared to be effectually diminished in frequency, and a further removal to Brighton in March checked them completely.

In this case the cerebral convulsions supervened *soon after weaning*; they were checked effectually by bleeding, and there was no recurrence of these symptoms notwithstanding the repeated and violent paroxysms of laryngismus for a lengthened period.

Dr. Robertson narrates a case in which “a vigorous healthful infant was attacked four hours after its birth by general convulsions, which were not subdued until twenty hours had elapsed. Symptoms of laryngismus appeared when the child was nineteen weeks old, and on the second day afterwards it was suddenly strangled by a spasm of the glottis whilst in the act of smiling.”—(*Med. Gazette*, Vol. xiii.)

CASE XVIII.

Laryngismus soon after weaning, complicated with cerebral convulsions.—Recovery.—Recurrence of the complaint a year afterwards.

J. M., a male infant, born on October 2nd, 1845. His head was more fully developed than usual as to size, but in this particular, as well as in shape, it much resembled that of his

father. The mother found herself unable, after a short time, to continue suckling, and as she had insuperable objections to a wet-nurse, the infant was weaned altogether on the 26th of January, 1846.

Although of an excitable temperament, the child had enjoyed excellent health up to this time; but the nurse being very anxious as to the personal appearance of her charge, had persisted in feeding him largely with very thick farinaceous food, notwithstanding my frequent remonstrances, aided by those of the mother.

On the 6th of February, at six A.M., the patient was attacked by a paroxysm of laryngismus, and another came on in the afternoon. On the ensuing day, a still more severe attack occurred, and was now accompanied by cerebral convulsions. The warm-bath was employed, and as the fontanel seemed rather elevated, two leeches were applied to the temples, and cold spirit lotion was kept constantly to the head. On the 12th, another paroxysm of a milder character supervened, and the nurse now mentioned that for a few days previously to the first attack, she had observed there were occasionally slight catches of the breath, but she had considered them as of no importance.

A wet-nurse was obtained, but as the child, after repeated trials, obstinately refused to take the breast, a much more rigid diet than formerly was now enforced; the bowels were freely purged, the anti-spasmodic mixture given, and the usual embrocation rubbed over the spine: from this time, no further attacks took place.

About a year afterwards—viz., on April 5, 1847, the child, who had now cut sixteen teeth, was again severely attacked by paroxysms of laryngismus. Dr. Grant, of Thayer-street, was immediately sent for, and on his arrival found that the child's teeth were clenched, the fingers were strongly contracted, the face and lips were congested, and a loud stridulous whooping noise accompanied inspiration. A warm-bath was

ordered, quarter-grain doses of calomel were repeated every four hours, and spirit-lotion was constantly applied to the head. An eminent practitioner saw the child at this time with Dr. Grant, and as he considered the case to be a well-marked instance of hydrocephalus, my attendance was also requested at the next consultation. The thumbs of both hands had been clenched into the palms for the two last days, the toes were bent downwards, the thighs were also flexed, and there was some stiffness about the lower jaw. No rolling of the head, squinting, sudden screaming, or dilatation of the pupil, were noticed; and the child's head, although large, was not more so in proportion than it had appeared a year previously. We found on inquiry that the same nurse had, for some time past, resumed her old habit of overfeeding the child, and that it had been daily supplied at dinner time with a mutton chop weighing *half-a-pound*.

The diet was now confined to milk and water slightly thickened with arrow-root, or barley; small doses of grey powder and calomel, followed by castor oil, were occasionally given, and the opiate embrocation was rubbed over the spine. Within twenty-four hours the contraction of the fingers and toes began to subside, the other symptoms rapidly gave way, and since that period the child has continued to enjoy perfect health, having gained flesh considerably, notwithstanding the reduced diet. For many months afterwards, it was observed that any attempt to feed the child on animal food immediately produced general and local irritability, and the nurse is now so strong a convert to the present plan of diet, that she dreads overfeeding as much as the strictest disciplinarian could wish for.

CASE XIX.

Cerebral convulsions, afterwards combined with laryngismus.

—Immediate recovery on the child's removal to the sea coast.

The following case came accidentally under my notice, but was not my own patient.

An infant, ten months old, which had been for some time partially fed by hand, but now entirely weaned, was brought to London from the country. Whilst cutting the first tooth it was seized with a severe attack of cerebral convulsions; bleeding from the jugular vein was performed by the practitioner in attendance, and the gums were freely lanced, with good effect. Three weeks after the child's return to the country, another convulsive fit occurred, and the same remedies which had previously answered, were now repeated. The diet was altered, but the child passed white pasty motions, and was much troubled by flatulence, as had been the case for some time past, the food appearing also to pass through the bowels in an undigested state. The family had occasion to return to London in February, and three days after their arrival, several strong paroxysms of laryngismus occurred, accompanied by loud crowing inspiration. Cold lotions were now applied to the head, calomel, combined with anti-spasmodics, was exhibited in repeated doses, the gums were lanced, and the paroxysms became of a milder description; on the application of a few leeches to the head, however, a very strong paroxysm supervened, attended by cerebral convulsions. As the spasms of the glottis did not materially abate, and the secretions from the bowels were still much disordered, it was decided to send the infant to Brighton. Whilst on the journey, although the child was much frightened by the noise of the railroad, and screamed violently, the attendants remarked

that the crowing noise had already much diminished. The North-east wind was bitterly cold at the time, but immediately on the child reaching the sea-coast the crowing ceased altogether, and the sleep continued undisturbed. The first motion, which passed soon after reaching Brighton, was of a white chalky character, but the succeeding evacuations were coloured by bile, and henceforward continued to improve. The diet was now confined to food of a thinner description, consisting principally of milk and water, chicken, or veal broth, and tapioca. The child, since its return home, has continued free from any symptoms of laryngismus, and the alvine dejections have been always of a healthy bilious character. Fourteen teeth have also appeared, without producing any further illness.

CASE XX.

*Laryngismus in a child, with unusual cerebral development.—
Recovery.*

The following case occurred in the practice of Mr. Coates, of Hart-street, Bloomsbury, to whom I am indebted for the present memoranda.

A child, eighteen months old, whose head was largely developed, with the fontanel not quite closed, and who still suffered much from dentition, was attacked with paroxysms of laryngismus. The face became dark, and the hands and feet clenched, but without the accompaniment of cerebral convulsions. There was no squinting nor dilatation of the pupil, but the child very frequently threw its head back, and rolled it from side to side. Notwithstanding the numerous remedies which were employed, these attacks continued at intervals for about ten months, and were often produced by the most

trifling cause, such, for instance, as any person entering the room, coughing, drawing a curtain, or making the slightest sudden noise.

It was remarked that if any food had been given, which did not digest properly, the fingers and toes were soon afterwards spasmodically contracted.

The treatment consisted of doses of hydr. c. erecta, with ipecacuanha, infusion of assafœtida, counter-irritation by the application of tinctura lyttæ to the spine, cold lotion to the head, and when more congestion than usual seemed to exist about that part, a leech was occasionally applied. At the expiration of the period above mentioned, the paroxysms gradually disappeared, but the head still remained of rather an unusual size. The patient has since grown up to adult age, but has not evinced at any period symptoms of hydrocephalus.

It was considered by those who professionally saw this case, that the disease was not hydrocephalus, but rather one of unusual cerebral development, and more susceptible therefore of the irritation which originated from dentition and the disordered state of the intestines.

CASE XXI.

Severe laryngismus, hydrencephalus, and cerebral convulsions combined, soon after weaning.—Change of air.—Immediate cessation of symptoms, followed by recovery.

The following case was the most intense I have ever witnessed; all the usual remedies were employed by Dr. Locock and myself, but they appeared to have no beneficial effect whatever in alleviating the symptoms until change of air, a

wet-nurse, and unusually powerful doses of opium, were simultaneously employed, when the cessation of the disease was almost sudden, but the debility, which was the result of it, only gradually disappeared; the case occurred more than ten years ago, and the patient, although of a languid constitution, has since that period generally enjoyed good health.

The child was born on August 4th, and weaned on 26th January following, when not quite six months old.

February 21st.—A little more than three weeks after weaning, he was attacked at six A.M. by a convulsive paroxysm, the effects of which continued for about twenty minutes; although a wet-nurse was speedily procured, it was found impossible to induce the child to take the breast, and as repeated attempts with other nurses likewise failed, ass's milk was substituted. For a week after this period there was no return of the cerebral convulsions, but frequent catchings of the breath, accompanied by the crowing inspiration, were noticed, and the child suffered much from "flatulence." On two occasions during the week he was seized, according to the mother's description, with "fainting fits;" as he turned perfectly cold, became quite insensible, deadly pale, and remained in this state for about half an hour on each occasion; the fontanel also was observed to be much depressed. The hot bath, friction of the spine and chest with a stimulant embrocation, and the internal administration of a few drops of sal volatile in water, when the child was sufficiently recovered to swallow, seemed to relieve the attack; but it was remarked, by the mother, that the child did not recover, either from these fainting fits, or from the convulsions, *without having previously expelled a considerable quantity of wind*. Small doses of vinum ferri were now given twice or thrice daily.

February 28th.—The patient was again attacked by cerebral convulsions, which lasted nearly an hour, and on the following day the paroxysms were of a still more severe character. The symptoms of laryngismus also became more

intense during the ensuing fortnight, notwithstanding all the various remedies employed; these chiefly consisted of the tinct. camphor. comp., assafœtida, both internally and by enema, warm carminative aperients, conium, tinct. humuli, &c.

During the 17th and 18th of March, not an hour, either night or day, passed without a recurrence of the attacks; the weakness caused thereby became so extreme, that the child could not raise his hand to his head, and the eyes remained closed, except during the paroxysms. On the 19th, at noon, a drop of laudanum was given, but five minutes afterwards one of the strongest convulsions which had yet appeared, supervened. As it had been previously resolved to try "change of air" as a "last resource," the child was now wrapped in blankets, and within an hour after this he was taken in the carriage to a lodging on Hampstead Heath, although the weather was then intensely cold, and a strong North-east wind prevailed. On arriving at his destination, and just before he was removed from the carriage, the patient was slightly convulsed, but he recovered before the hot-bath could be prepared. One drop of laudanum was given every six hours, and the assafœtida injections were likewise occasionally administered. On the following day the child's aunt, who was nursing at the time, having fortunately induced it to take the breast, a wet-nurse was again procured; all other food was of course now discontinued. The child lay constantly without moving, his eyes were closed, he was very feeble, and suffered apparently from great thirst, but from the period of his arrival at Hampstead, *he had no return either of the spasms, of the cerebral convulsions, or of the fainting fits*, and the crowing inspiration speedily disappeared.

The same doses of laudanum were continued, but at longer intervals, and were more especially given when there was any restlessness or agitation, which symptoms heretofore had invariably preceded the paroxysms: this remedy had now the effect of at once subduing them.

The little patient left Hampstead, on the 2nd of April, for Surrey, having then recovered materially both his health and strength; his food consisted of breast-milk alone for some time afterwards, and he never again suffered from any symptoms of laryngismus.

A younger child of the same family, brought up chiefly at the breast, was threatened more than once during dentition by this spasmodic affection; but lancing the gums, and a small dose of calomel, with Dover's powder, on each occasion arrested the symptoms.

CASE XXII.

Laryngismus soon after weaning, and recurring occasionally until the third year.—Paroxysms often voluntarily produced.—No attacks whilst at the sea coast.

The eldest child in this family, who had been suckled for several months, and then fed on very thin food, had passed over the period of dentition without any illness whatever.

S. S., the second child, a boy, was likewise suckled for the first nine months, but after this period there being a deficiency in the supply of breast-milk, he was partly fed by hand, and, on weaning, the farinaceous food which was given was much increased in thickness. The infant had previously enjoyed good health, but three weeks after weaning, whilst irritated by some occurrence, he was suddenly attacked by a very severe paroxysm of laryngismus. The hands were clenched, the head thrown back, the muscles of the neck became rigid, the countenance livid, and the limbs stiffened. which symptoms were accompanied by the usual whooping sound. A hot bath was immediately used, and the attack

ceased, but the paroxysms returned daily after this period, and sometimes in rapid succession. The child was allowed to have his own way in every thing, as it was observed that the least opposition to his wishes produced an attack. Purgatives were given, but the same system of feeding, I understand, was continued. To such an extent, however, was the production or stoppage of a paroxysm, under the control of the child itself, that the father, a highly intelligent man, assured me, that if he could only come to him at the commencement of a paroxysm, the full force of the attack was invariably checked by fondling. The child would sometimes wilfully hold in his breath until his father kissed him. During dentition the paroxysms were more frequent, owing to the general irritability of the system, and after a severe attack, he would sometimes lie for hours without moving, and would remain quite pale for a long time afterwards. When fourteen months old, he was attacked by bronchitis, and it was observed that the paroxysms became of a stronger character after this time, until at length he was sent to Brighton, when fifteen months old; he remained *five* months at the sea-side, and no severe attack occurred during that period; occasionally a mild paroxysm came on, but by putting the child immediately on his feet, his attention was arrested by the fear of falling, as was also the further progress of the attack. On returning to London, when twenty months old, the paroxysms again assumed a more severe character, but it was soon fortunately discovered that the threat of putting the head under the water-tap (which process had been once resorted to with good effect) immediately arrested the symptoms.

This child is a quick, intelligent boy, of a highly nervous and excitable temperament; his bowels have generally been very irregular, and much inclined to constipation, requiring the frequent use of aperients. The attacks came on at uncertain intervals up to his *third year*, being the latest period which has come under my notice. He still occasionally, when

irritated, threatens to "hold in his breath," and sometimes commences to do so, but the immediate preparations for the *cold water cure* invariably check any further attempt on his part.

The boy's father considers that every paroxysm which took place during the last year, with one exception, had been brought on *wilfully*. In the exception alluded to, it occurred spontaneously on the boy's recovering from an attack which he had himself produced in the usual manner. No cerebral convulsions have accompanied the spasmodic affections.

An effort of the will, in this instance, was sufficient to close the glottis, but the natural irritability of the muscles which govern the aperture, appears to have been excited by such action, and an involuntary spasmodic closure then followed it.

CASE XXIII.

Laryngismus at the age of two years—Partly under self-control of the child.

February, 1848.—The next child, a girl, born on April 2, 1846, has generally enjoyed good health, and has cut most of the deciduous teeth easily. She was weaned at seven months, and has since been fed on farinaceous diet. For the last six months the patient has quite altered in character, and has become irritable in temper, whilst slight spasmodic attacks, similar to those of her brother, have been occasionally observed since that period. During a visit to another member of the family, I was requested to lance the child's gums, as she was evidently suffering from them, and her father was afraid that the spasms might therefore come on more severely than heretofore. The

operation caused the child to ery, and immediately brought on a very severe paroxysm,—so much so, indeed, as to alarm the father, although he had been previously accustomed to witness similar attacks in his elder child. I recommended that the farinaceous food should be reduced in thickness as much as possible, and that the bowels should be well cleared by purgatives, as the child was generally constipated: the anti-spasmodic mixture was also given daily, afterwards, in small doses.

The paroxysms since this period have been of a much milder character, with two exceptions; once when accidentally struck, and, at another time, when irritated by a refusal of her toys; but on each of these occasions she was soon restored by cold affusion to the head.

The patient, who is now nearly two years old, has lately cut her last molar teeth, and as usual with her at such times, has been more irritable, and more predisposed to the spasmodic paroxysms. The only mode of arresting these attacks, as in the case of her brother, is by pacifying and fondling her, and if this does not soon succeed, a pail of cold water is brought into the room, the sight of which induces an immediate effort to stop the paroxysm.

CASE XXIV.

Laryngismus and cerebral convulsions.—Removal of child to the country.—Immediate beneficial result.

The infant son of a physician, residing in London, suffered much during dentition; when fourteen months old, he was weaned, and after this period the diet consisted almost entirely of farinaceous substances. Four months subsequent to weaning he was attacked by severe paroxysms of laryngismus, and as dentition was supposed to be the exciting cause, the gums

were repeatedly lanced, but without any relief; purgative medicines were administered, and, at the same time, in order to try the effects of change of air, the child was sent to Greenwich; during the ensuing week he seemed to improve, and there was no recurrence of the paroxysms, but the complaint, after this period, returned more severely than before, and was now accompanied by cerebral convulsions. The gums were again repeatedly lanced, and aperient medicine given occasionally; the diet consisted chiefly of sponge cakes, jelly, chicken broth, and milk, whilst tonics, such as quinine, and sesquioxide of iron, were administered, but without any good result, and the child was brought back to London much worse than when he left home. On the evening of his return, as the symptoms threatened a recurrence of the cerebral convulsions, two leeches were applied to the nape of the neck, but the small loss of blood caused such a depression of the vital powers, that it was found necessary to remove the leeches speedily, and to administer wine to the infant: he remained very weak, and suffered daily from repeated attacks of the spasm, which were always accompanied by the crowing inspiration. It was at length decided again to remove the patient from town, but on this occasion *to a country village* in Kent, where he remained for several weeks. A diarrhœa now came on, and continued for some time, but from this period the paroxysms gradually subsided, and the little patient gained strength rapidly, and no attacks of the complaint recurred.

It will be observed, in this case, that the removal from one town to another produced partial benefit for a time, but the change was not sufficiently decided. At an after period, the pure air of the country, aided by the diarrhœa, which evidently relieved the symptoms, by carrying off the irritating contents of the bowels, caused an instantaneous amendment to take place, and was followed by speedy recovery.

In another similar case, the infant of a medical practitioner,

residing a few miles from London, was attacked by laryngismus, whilst in town: the patient was soon afterwards removed to its native air without any beneficial result, but on being taken to the sea-side the paroxysms *immediately* ceased.

CASE XXV.

Laryngismus soon after weaning.—Purgatives, anti-spasmodics, with change of air and diet.—Speedy recovery.

A stout, healthy-looking female child, sixteen months old, who had cut all its deciduous teeth, with the exception of four, was brought to me for advice, as the nurse had occasionally heard, for the last fortnight, a strange catching in its breath, which was sometimes accompanied by a crowing sound; this symptom was especially noticed on the child's awaking in the morning, or if, when out of doors, the wind blew strongly in its face; any excitement would also produce it, according to the nurse's account. I learned that the child had been weaned two months since, that it had since been fed on thick farinaceous food, and that the alvine secretions had been for some weeks past of a thick pasty character, and of a very light colour; the countenance of the child was dull, but the gums, on examination, did not appear either red or swollen.

One grain of calomel was ordered to be given night and morning, for three successive days, and a teaspoonful of castor oil at noon. Enemata of warm water were employed each night, the anti-spasmodic mixture was also given, after the second day of treatment; and the food was confined to milk and water, slightly thickened with arrow-root.

In the course of four days, the paroxysms were much less frequent, and were materially reduced in force, but as they

did not altogether cease, the parents were recommended to remove the child to the country. A sojourn at Ramsgate for a fortnight was attended with good results, as no further paroxysm was noticed after leaving town, and when the remaining four teeth came through the gums, at an after-period, no recurrence of the spasms took place.

CASE XXVI.

Laryngismus occurring within the first month in an infant fed principally by hand.—Change of air and wet-nurse when five months old.—Partial recovery.—Relapse after returning home.—Loss of sight and hearing.—Hydrencephalus.

The present case is inserted, although still under treatment, as it presents some peculiar points.

G. M. was a fine healthy male infant when born, on May 17, 1848, but the mother, having a very insufficient supply of milk, was compelled to feed the child partly by hand, from the first, and the farinaceous diet which was employed, was gradually made thicker in consistence. The infant was much troubled by flatulence during the first month, and slight catchings of the breath were observed at the same period, especially during the night. As the breast-milk diminished in quantity, the paroxysms became rapidly worse, and were accompanied by a peculiar crowing sound. During a sojourn at Hastings, which was made by the family, when the child was two months old, its general health improved, and the paroxysms were not so frequent, but the latter did not materially diminish in intensity.

I was first consulted, in conjunction with Mr. English, of Denmark-hill, as to the child, when it was four months old, and it then presented decided symptoms of laryngismus. The bowels were in a deranged state, the motions being curdled and of a

light colour, with a sour odour : flatulence was also a distressing symptom. The countenance had an anxious expression, the child was much emaciated, and the muscles of the neck were so wasted, that they were not sufficient to maintain the head in its proper position. Mercurial aperients and antispasmodics were ordered, and as the mother's milk was scanty, and evidently disagreed with the infant, a wet-nurse and change of air were strongly recommended. The former was objected to, but the child was removed to Brighton after a short time, and the paroxysms soon became of a milder character; no decided amelioration, otherwise, was observed. At length, on October 9th, a wet-nurse was procured, and by a letter received from the parents, a week afterwards, I learned that the child had since improved daily, that it slept much better, its flesh was firmer, and it could hold its head up; the paroxysms were also much less frequent.

The child returned from Brighton on October 25th, and two days after this, when it was brought to my house, it was evidently much improved in every symptom; the bowels now acted regularly, and the secretions were healthy.

On November 14th, I was again requested to visit the child at Denmark-hill, with Mr. English, as it had become much emaciated for the last ten days, but no paroxysm of laryngismus had occurred during this period. No medicine had been given lately, with the exception of an occasional dose of the antispasmodic mixture, as the bowels were in excellent order; there were no spasmodic attacks, sickness, or flatulency, and the child took the breast well. There was great restlessness, however, and the sleep never exceeded half an hour in duration at one time, either in the day or night. The child rolled its head from side to side, but did not scream, and the attendants considered that for the last week it had not been able to discern objects. On passing a candle before it, however, the pupils contracted, and the eyes followed the light, but it did not now, as formerly, recognise one person from another;

the hearing also was affected. The face did not present a distressed expression, but was pale; the anterior fontanel was depressed, the extremities were cold, the head and body of a cool temperature: anæmia and hydropcephaloid affection were evidently present. The urine was not high coloured, the dejections were healthy, and the gums not swollen or inflamed. There was a tendency to contraction of the fingers and toes, but no squinting had been noticed.

The gastric and intestinal irritation had disappeared, and cerebral irritation had apparently taken their place. One grain of Dover's powder was ordered at night, and small doses of vin ferri, to be given in water twice daily; the spine to be rubbed with the embrocation, and the feet to be kept warm; five drops of brandy in milk were also prescribed, to be given every three or four hours.

November 23rd.—At our meeting, on this day, I learned that the child had slept for two hours consecutively after the first powder, but had been restless since that time. The vin ferri had been rejected by the stomach, and was not persevered with. On the 20th and 21st, Mr. English had thought there was a decided improvement, but the child was afterwards not so well, and last night a spasm of the glottis again appeared. The emaciation was increased, the hands and feet were cold, and squinting had lately been observed. The alvine evacuations were still healthy, and the child sucked well. Ordered five drops of liq. ammon. to be given in milk three times daily; one drop of tinct. opii at night, and one grain of the ferro citrate of quinine twice daily: the brandy also to be continued.

[Whilst this sheet was passing through the press, I learned that the child gradually became more feeble, and died on Nov. 27th, without convulsions or any other active symptom having appeared.]

November, 1848.

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